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Chapter 16. THE 1970 COMPONENTS OF INVENTORY CHANGE SURVEY

INTRODUCTION

Origin of the Survey

During the intercensal period in the early 1950's, representatives of the Bureau of the Census, Federal housing agencies, and other users of census data developed the components of inventory change survey to meet the increasing needs for specialized types of housing data. They designed this survey to obtain counts and characteristics of the types of changes which occur in the housing inventory, such as new construction, conversions, mergers, other additions, demolitions, and other losses, as well as counts and characteristics for that segment of the housing inventory which remains the same.

The first survey of this type was the National Housing Inventory (NHI), which was conducted in 1956. Information was collected on the types of changes that occurred in the housing inventory between April 1950 and December 1956 for the United States, the four census regions (Northeast, North Central, South, and West), and nine selected standard metropolitan areas (now known as standard metropolitan statistical areas, or SMSA's). The 1959 components of change survey was conducted as part of the 1960 census in the combined program known as the Survey of Components of Change and Residential Finance (SCARF) and provided information on the changes in the housing inventory between the decennial censuses (specifically, between April 1950 and December 1959), as well as changes since the NHI (December 1956 to December 1959). This information was collected for the United States, the geographic regions, and 17 selected SMSA's. The 17 SMSA's included 9 which had been in the 1956 NHI.

Because of the demand and continued requests from both governmental agencies and private industry for this unique type of information, the Bureau conducted the 1970 Components of Inventory Change Survey (CINCH) as part of the 1970 census. Data resulting from this work were summarized for the entire United States and the four regions, and for 15 selected SMSA's and the areas inside and outside their central cities. The SMSA's covered in the 1956, 1959, and 1970 surveys are shown in table 1.

Purposes and Use of the Data

By comparing data from two successive decennial housing censuses, only the net change occurring over a 10-year period can be determined. The types and magnitudes of compensating gross changes (e.g., the number and kinds of housing units added by new construction or lost from the existing inventory by demolition) cannot be ascertained simply by analyzing the results of the two censuses. During the intercensal period the Census Bureau provides information on building permits, housing starts and completions, and, to a limited extent, data on demolitions. Because of its design, the CINCH program provided the only comprehensive source of information on all changes in the housing inventory due to new construction, other additions, conversions, mergers, demolitions, and other losses which occurred during the last decade. In addition, data on selected housing and population characteristics were collected to determine what types of housing units and households were associated with the various types of changes and what effect they had on the housing inventory. Furthermore, sample data also were compiled for the largest portion of the housing inventory--the units not affected by these changes, i.e., "same" units. (Such information could not be derived from the regular census data, which provide only net changes in the gross housing inventory over a decade, without detailed information on the components of change and their related characteristics.)

Table 1. **SMSA's Included in Components of Change Surveys, by Region**

Region and SMSA	1970 CINCH	1959 SCARF	1956 NHI
NORTHEAST			
Boston	X	X	-
Buffalo	X	X	X
New York	X	*X	X
Philadelphia	X	X	X
Pittsburgh	-	X	-
NORTH CENTRAL			
Chicago	X	*X	X
Cleveland	X	X	-
Detroit	X	X	X
Minneapolis-St. Paul	-	X	-
St. Louis	X	X	-
SOUTH			
Atlanta	X	X	X
Baltimore	-	X	-
Dallas	-	X	X
Houston	X	-	-
Miami	X	-	-
Washington, D.C.	X	X	-
WEST			
Los Angeles-Long Beach	X	X	X
San Francisco-Oakland	X	X	-
Seattle-Everett	X	X	X

*Standard consolidated areas.

The data gathered by the CINCH program are in demand in both public and private sectors, because future housing needs often can be predicted by studying the pattern of changes in the supply. For example, home builders use the data to help anticipate supply and demand for new homes; financiers use them to plan lending programs; contractors use them for estimating resources needed; and public-works officials take them into account in planning for utilities to meet future needs. In addition, such information can be of great value to Federal, State, and local government agencies; e.g., changes in the housing supply affect planning in such fields as employment, credit, and housing and community development. Information from the CINCH survey--particularly the counts of conversions, mergers, other additions, demolitions, and other losses--is used as one of the inputs in the development of mathematical models for projecting future housing inventories.

Definitions

The basic principle of the components of change surveys was to divide the housing inventory into broad categories, or components, to measure the changes that occurred between two points in time, usually decennial censuses. The term "components of change" refers to these individual parts which comprise and explain (1) the source of the current inventory and (2) the disposition of the existing inventory. When related either to the 1960 inventory or to the 1970 inventory, the sum of all components except "same" units (see below) is a measure of all the changes that took place in the inventory over the period studied. For example, the number of changes between 1960 and 1970 that affected the 1960 inventory is the sum of units changed through conversion, units changed through merger, units lost by demolition, and units lost from other causes. Similarly, the number of changes between 1960 and 1970 affecting the 1970 inventory is the sum of units changed through conversion, units changed by merger, units added by new construction, and units added by other means.

The definitions of the components used in the CINCH survey were essentially the same as those used in the 1956 and 1959 surveys and are given below.

Same units.--Living quarters enumerated as one housing unit in 1970 were classified as "same" if the quarters existed as one, and only one, housing unit in 1960. Thus, "same" units were common to both the 1960 and 1970 inventories. Units which were changed after 1960 but by 1970 had been changed back to their 1960 status also were considered "same" units; for example, a 1960 housing unit converted into several units and later merged to one unit or a housing unit changed to nonresidential use and later restored to its 1960 residential use. Changes since 1960 in the characteristics of a housing unit did not affect its classification as "same" if it was one housing unit in 1960 and in 1970. Examples of such changes in characteristics are finishing a bedroom in the attic, installing an extra bathroom, or enlarging the kitchen.

Units changed by conversion.--Conversion refers to the creation of two or more 1970 housing units from fewer 1960 units through structural alteration or change in use. Structural alteration included such changes as adding a room or installing partitions to form another housing unit. Change in use is a simple rearrangement in the use of space without structural alteration, such as locking a door which closes off one or more rooms to form a separate housing unit.

The term "changed by conversion" was applicable to both the 1960 and 1970 inventories. For example, one housing unit in the 1960 inventory which subsequently was converted to three housing units was counted as one unit changed by conversion for purposes of the 1960 statistics and as three units changed by conversion for purposes of the 1970 statistics. Thus, subtraction of the 1960 figure (one unit) from the 1970 figure (three units) yields the net number of housing units (two) added as a result of conversion. The number of conversions did not include units that had been converted at some point between 1960 and 1970 but had reverted to the 1960 status before the 1970 enumeration.

Units changed by merger.--A merger is the result of combining two or more 1960 housing units into fewer 1970 units through structural alteration or change in use. Structural alteration includes such changes as the removal of partitions or dismantling of kitchen facilities. Changes in use could result from a simple rearrangement of space without structural alteration, such as unlocking a door which formerly separated two housing units. A change in use also occurred, for example, when a family occupied both floors of a house which formerly contained a separate housing unit on each floor.

The term "changed by merger" was applicable to both the 1960 and 1970 inventories. For example, two housing units in the 1960 inventory which subsequently were merged into one housing unit were counted as two units changed by merger for purposes of the 1960 statistics, and as one unit changed by merger for purposes of the 1970 statistics. Thus, subtraction of the 1970 figure (one unit) from the 1960 figure (two units) yields the net number of housing units (one) lost as a result of merger. As with conversions, units that had been merged after 1960 and reconverted to their 1960 status before the 1970 enumeration were not included in the figures on mergers.

Units added through new construction.--Any housing unit built in 1960 or later was classified as a unit added by new construction. This included occupied trailers and mobile homes, if their model year was 1960 or later. Housing units built in that period but removed from the housing inventory before April 1970 were not reflected in the survey figures. Housing units built during the period but subsequently changed by conversion or merger were classified as new construction in terms of the number existing at the time of the 1970 census. Vacant units under construction at the time of the survey were enumerated only if construction had proceeded to a point where all exterior windows and doors were installed and final usable floors were in place.

Units added through other sources.--Any housing unit added to the inventory after 1960 through sources other than new construction or conversion was classified as a

unit added through other sources. This component included the following types of additions:

1. Units created from living quarters classified as group quarters in 1960; for example, rooming-house quarters occupied by six unrelated persons in 1960 but by a family in 1970.

2. Units created from nonresidential space such as a store, garage, or barn.

3. Units that were built in 1959 or earlier and moved to the present site after 1960. Such units, if moved within the same area, did not necessarily result in a net addition to the total inventory since they presumably represented units lost in the place from which they were moved. A mobile home or trailer, whether on a different site or the same site as in 1960, was a net addition if occupied as a housing unit in 1970 but not in 1960.

Units lost through demolition.--A housing unit which existed in April 1960, and which was torn down on the initiative of a public agency or as a result of action on the part of the owner, was classified as a unit lost through demolition.

Units lost through other means.--Any housing unit which existed in April 1960, and which was lost to the housing inventory through means other than demolition or merger, was classified as a unit lost through other means. This component included the following types of losses:

1. Units lost by change to group quarters; for example, a housing unit occupied by a family in 1960 and by a family and five lodgers in 1970.

2. Units lost by change to nonresidential use.

3. Vacant units lost from the inventory because they were unfit for human habitation; i.e., one in which the roof, walls, doors, and windows no longer protected the interior from the elements.

4. Vacant units lost from the inventory because there was positive evidence (sign, notice, mark on the house or block) that the units were scheduled for demolition or rehabilitation or that they were condemned for reasons of health or safety so that further occupancy was prohibited.

5. Units moved from site since April 1960. Such units, if moved within the same area, did not necessarily result in a net loss from the total inventory since they presumably represented units added in the place to which they were moved. A mobile home or trailer, whether on a different site or the same site as in 1960, resulted in a net loss if occupied as a housing unit in 1960 but not in 1970.

6. Units destroyed by fire, flood, or other cause. Because of the difficulty in ascertaining the actual cause of the disappearance of a unit due to the time period involved and the frequent lack of a knowledgeable respondent, it is possible that some units listed in this manner had actually been demolished, and vice versa.

PLANNING THE SURVEY

Improvements

Because of the highly technical aspects in sample design and selection, enumeration techniques, and data processing, the components of inventory change program constitutes one of the more complex surveys conducted by the Bureau. It was essential, therefore, that planning for the CINCH survey be initiated at an early stage. Immediately after the Census Advisory Committee on Housing Statistics recommended in June 1966 that a components of housing inventory change program be included as part of the 1970 census, a subcommittee for the components of change survey was established to work closely with Bureau representatives to improve the scope and usefulness of the data. In addition, other major users of the components-of-change data were contacted for recommendations. At the same time, Bureau staff members were considering changes in the design, procedures, and outputs of the proposed survey. Of the proposed recommendations, the following were incorporated in the CINCH program:

Geographic coverage.--The information from the survey would be published for the Nation as a whole and for each of the four geographic regions by inside and outside SMSA's, and inside SMSA's by "in central city" and "not in central city." In addition, data for as many individual SMSA's as possible should be published. Because of the great demand by city planners for components-of-change data, it was recommended that the data for the individual SMSA's be shown on an "in central city" and "not in central city" basis even at the risk of reducing the number of SMSA's in the survey. It also was recommended that the geographic boundaries of the SMSA's and their central cities conform as closely as possible to those in the 1970 census.

Selection of the SMSA's.--The selection of the individual SMSA's would be based on specific criteria, for example, geographic distribution by regions, the amount of new construction during the decade, and continuity with the two other surveys. If New York and Chicago were selected, the data would be more meaningful if shown for the SMSA instead of the standard consolidated area (SCA) as was done in the 1959 SCARF program. For SMSA's with two central cities, such as the Los Angeles-Long Beach SMSA, only data for the principal city would be published, with data for the remaining central city being included in the balance of the SMSA. For the United States and regional summaries, however, the information for both cities would be published as "in central city" inside the SMSA's.

Items and tabulations.--More items would be collected that are descriptive of each component household. Among the recommended additional items were family income, education of household head, number of bedrooms, main reason for move, and number of times the household moved since 1969. Demographic items, such as family income and education of the household head particularly, would provide more and better data for "same" units and perhaps would help explain some of the changes constantly occurring in the housing inventory. Additonal items on "recent movers" (households that moved in

1969 or later) would provide more meaningful tabulations of these persons and their characteristics. It also was suggested that more information on Negro households be provided, even if available only in unpublished form.

The Census Advisory Committee on Housing Statistics strongly recommended that the Bureau provide data on structural condition and plumbing, particularly since it was not feasible to obtain information on structural condition in the 1970 census. While it was recognized that data on condition were not reliable (see U.S. Bureau of the Census Working Paper No. 25, Measuring the Quality of Housing), the inclusion of condition in the CINCH survey would provide a bridge between the 1960 and 1970 housing-quality measures.

New construction and demolitions.--One of the major recommendations for improvement of the survey was that the method of obtaining the counts and characteristics for new-construction units be changed. Preparation of the new-construction sample for the 1956 and 1959 surveys consumed a great deal of time and money. (For a description, see U.S. Bureau of the Census, 1960 Censuses of Population and Housing: Procedural History, Part II, Chapter 2.) This was necessary because of the gaps in the official Federal new-construction data series compiled in the 1950's. Following improvements in the data-collection and processing procedures on building permits and housing starts, the Federal series of the 1960's was considered to be reliable and representative.

Two new alternative techniques were considered for selecting the new-construction universe for the CINCH survey: (1) A sample selected from building permit records or (2) a sample selected from the 1970 census records, consisting of housing units for which the year built was reported as 1960 or later.

In the first alternative, CINCH personnel would select a sample of addresses from building permits issued during the decade. They would visit these addresses to obtain the counts and selected characteristics in the CINCH survey. The second alternative would involve tabulating from the 1970 census records the counts and most of the characteristics of units built in 1960 or later. In addition, personnel would select and visit a sample of these new units to obtain information on the additional CINCH characteristics, such as structural condition and the recent-mover items. Research conducted on the alternatives revealed that data produced by the first alternative would not be superior to those obtained from the 1970 census records; hence, the additional expense and time were not warranted. It was decided, therefore, that the 1970 census records would become the basis for obtaining the counts and most of the characteristics of the new units.

Since the new method for obtaining new-construction information would be considerably less costly and time-consuming than previously used methods, the Census Advisory Committee recommended that the Bureau concentrate its CINCH resources on obtaining more reliable data on losses to the 1960 inventory, particularly demolitions. The committee suggested that local housing authorities could identify areas in the central cities of the selected SMSA's where large-scale demolition had occurred during the past decade, and that this information, if available, would be the basis for stratifying the 1960 sample to obtain better estimates of demolitions.

Sample design.--In the 1959 survey, enumerators determined the components of change by listing current information for all 1959 living quarters and comparing it with similar information on the 1956 National Housing Inventory or the 1950 census records for small land-area segments. (A segment was part of a 1950 enumeration district (ED) with positive geographic boundaries--roads, highways, streets, alleys, rivers, etc.--placed on a map so that the enumerator could easily identify all living quarters for that segment.) In rural areas, the 1959 sample of units in the segments was supplemented by a "list" or address sample generally consisting of six 1950 addresses of living quarters located in the same ED as the segment. Enumerators located these addresses and determined if each structure still contained living quarters or whether the entire structure had been lost to the inventory because it had been demolished, moved from its site, or was used entirely for nonresidential purposes, etc.

Because of the success of the "list" sample in the 1959 survey and in the Bureau's current programs during the 1960's, Bureau staff members recommended that the "list" sample approach be used in the CINCH survey for all components in both urban and rural areas. They estimated that this type of sample design would reduce the cost of the survey and substantially improve the reliability of the components, particularly in urban areas. Although there was some doubt that the "list" procedure would yield reliable counts of "sames," conversions, or mergers in rural areas, it was decided that this procedure should be tested in rural areas. (The ultimate sample design is described on pp. 7 and 8.)

Sample size for characteristics.--For each CINCH tabulation area in the individual SMSA's--"in central city" and "not in central city"--the size of the sample for the 1960 and 1970 characteristics would be approximately the same as the sample size for the total SMSA in the 1959 SCARF program. The resulting increase, of course, would improve the reliability of the characteristics for the total CINCH SMSA. The sample size for the remaining portion of the Nation outside the individual SMSA's--"balance of United States"--would be essentially the same as the corresponding sample for the 1959 survey.

Unit of Enumeration

Since the unit of enumeration in the 1960 and 1970 censuses was the housing unit, this was also the unit of enumeration for the CINCH survey, as the components of inventory change were determined by a unit-by-unit comparison of the 1970 information collected for the CINCH survey with similar data from the 1960 census records. The Census Bureau defines a housing unit as "a house, apartment, group of rooms, or a single room occupied as separate living quarters or, if vacant, intended for occupancy as such." Separate living quarters are those in which the occupants live and eat separately from everyone else in the building (or apartment) and which have either (1) direct access from the outside or from a common hall or (2) complete, separate

kitchen facilities for exclusive use of the occupants. Essentially, the definition of the 1970 housing unit (above) was the same as that used in the 1960 census. The 1960 question on cooking equipment, however, was broadened in 1970 to cover "complete facilities"; i.e., an installed sink with piped water, a range or cookstove, and a mechanical refrigerator. (For a more detailed definition of a housing unit, see chapter 15.)

Selection of the SMSA's

In accordance with recommendations, specific criteria were developed for selecting the individual SMSA's to be included in the CINCH survey. Four different sets of SMSA's were prepared, each with the SMSA's selected by different combinations of the following criteria: (1) Continuity with the 1956 and 1959 surveys; (2) geographic location, particularly within each region; (3) inclusion of new SMSA's; (4) the average overall ranking of the 25 largest SMSA's by the projected number of housing units, the estimated proportion of new construction during the decade, and the percentage of 1960 units occupied by Negro households; and (5) the ranking of each SMSA within regions by the estimated 1970 population.

The original budget for the decennial census permitted separate publications for only 10 SMSA's, but additional funding from the decennial census program allowed 5 more SMSA's to be included in the CINCH program.

In July 1968 these 4 sets of SMSA's were presented to the Housing Advisory Subcommittee for the final selection of 15 SMSA's. The set selected was based on the ranking of the 1970 estimated population by region (criterion 5), because this provided the best possible regional distribution and the greatest continuity with the 1959 SCARF program. Table 1 presents the SMSA's selected for the CINCH survey by region, compared with the metropolitan areas covered in the 1956 and 1959 surveys.

Timing

Since the purpose of the CINCH survey was to measure changes which occurred during the last decade, the CINCH enumeration date necessarily would be as close as possible to the 1970 census date of April 1, 1970. As the CINCH survey had to utilize information from the 1970 census in the sample design and subsequent tabulations, progress of the survey was in part dependent on the progress of the decennial census. CINCH enumeration, therefore, began in the fall of 1970 and was completed in the early summer of 1971. Information was collected as of the date of enumeration. Because the major portion of the survey was completed by December 1970, the statistics may be regarded as referring to that date. The planners of the CINCH survey anticipated that problems would develop because the major CINCH activities had to be integrated with the 1970 Census of Population and Housing, which had higher priorities with respect to personnel and other Bureau resources. Although some problems did occur, careful coordination minimized their effect on the survey.

In table 2, the general starting and completion dates are shown for each major CINCH operation. A more detailed discussion of the timing is given in the sections describing each major phase of the survey.

Table 2. **The 1970 CINCH Survey Operational Timing Chart**

Operation	Started	Completed
PRETEST		
Preenumeration preparation, including planning	July 1968	Apr. 1969
Enumeration	May 1969	July 1969
Analysis of procedures and results	Aug. 1969	Dec. 1969
BASIC SURVEY		
Specifications for sample selection		
1960 sample	Sep. 1969	Oct. 1969
1970 sample	Sep. 1969	Jan. 1970
Sample selection, including programming and procedures,		
1960 sample	Oct. 1969	June 1970
1970 sample	Apr. 1969	Apr. 1971
Preenumeration processing, including preparation of procedures		
1960 sample	Oct. 1969	Sep. 1970
1970 sample	Nov. 1969	May 1971
Preparation of enumeration materials		
Schedules and manuals, including printing	Sep. 1969	June 1970
Training materials	Oct. 1969	Oct. 1970
Training and enumeration		
1960 sample	Sep. 1970	Jan. 1971
1970 sample	Sep. 1970	July 1971
Clerical postenumeration processing, including procedures, quality control	Oct. 1970	Oct. 1972
Computer postenumeration processing, including collations, edits, and recodes.	Dec. 1970	Oct. 1972
Weighting and ratio estimation	July 1972	Apr. 1973
Determining variances	Sep. 1972	June 1973
Publication preparation		
Text preparation, including publication processing	Mar. 1972	June 1973
Table preparation	Oct. 1972	June 1973
Printing of final reports	May 1973	Aug. 1973

Pretest

The procedural test for the CINCH program was conducted in the spring and summer of 1969 in Dane County, Wis., and Sumter County, S.C. In 1968 these two counties were the sites of dress rehearsals of the 1970 decennial census procedures. Therefore, the sampling materials that were to be used in the 1970 CINCH survey were readily and economically available in these counties for the CINCH pretest. The primary purpose of the pretest was to determine whether the various enumeration procedures and forms were practical, efficient, and workable and would obtain the type of information the survey was seeking. Several other important operations also were tested, including the following: Sample selection; forms design; preenumeration clerical processing; field training for supervisors, crew leaders, and enumerators; enumeration; field office editing; and, to a limited extent, clerical postenumeration processing. The cost of these procedural tests was approximately $139,000. (See p. 40).

Time did not permit computer postenumeration processing. Several problems later developed which possibly might have been minimized or eliminated had that important phase of the survey been tested.

The sample size for the procedural pretest consisted of about 4,000 units--3,000 in Dane County and 1,000 in Sumter County. The sample for determining disposition of the 1960 housing inventory was selected from 1960 census records, while addresses in the tape address registers in mail areas and in listing books for nonmail areas prepared for the 1968 dress rehearsals were the sources of the sample used for measuring additions to the housing inventory since 1960. Four different enumeration procedures were developed to deal with the following four different sample sources:

1. 1960 list sample, taken from the 1960 census records for urban areas which had "good" addresses (street name and house number). This sample was used to obtain counts and characteristics of all components except new construction and other additions.

2. 1960 area segments, taken from the 1960 ED's for areas (primarily rural) which did not have "good" addresses; i.e., an insufficient number of the housing units were identifiable by street and house-number addresses. This sample was used to obtain counts and characteristics of all components, including new construction and other additions.

3. 1968 new-construction sample, taken from the 1968 dress rehearsal records to obtain counts and characteristics of new construction and other additions in urban areas.

4. 1968 list sample, taken from the 1968 dress rehearsal records in rural areas. This sample was used to obtain counts and characteristics of all components and was an alternate sample source for the 1960 area segments.

The major objectives of the test in predominantly urban Dane County were to determine the feasibility of selecting a sample of addresses by computer in mail areas, using the tape address registers, and to see what enumeration problems might occur in urban areas. (Several enumeration problems which later arose in the basic CINCH survey in large cities late in 1970 did not occur in the procedural test because the social and economic composition of Dane County differed significantly from that of the more densely populated urban areas.) Sumter County provided the basis for testing alternate procedures in rural areas.

To collect the required data, several forms were designed; they included the following:

1. Two inventory-change schedules, one for use with the 1960 list sample and the other for the 1960 area, new-construction, and 1968 list samples.

2. Two precanvass forms, used in various combinations with the inventory-change schedules.

3. One characteristics schedule, used to obtain additional data for a sample of 1968 units in each enumerator's assignment.

4. An address sample form, used in the area-segment sample to obtain information about an additional sample of whole-structure losses such as those demolished, moved from site, etc.

5. Two types of folder identification labels, depending on the type of enumeration procedure to be used.

6. Two types of control cards.

Each Census Bureau regional office (St. Paul, Minn., for Dane County and Charlotte, N.C., for Sumter County) had one supervisor who had overall responsibility for all phases of the program with occasional guidance from the regional office supervisor. Dane County had two crew leaders who supervised enumerators, reviewed completed work on early assignments, observed enumeration, and reassigned work when necessary. In Sumter County the supervisor also assumed the functions of crew leader.

In each regional office one clerk maintained records of segments assigned to crew leaders and kept records of completed segments. Other clerks edited the completed assignments. The actual enumeration required about 6 enumerators in Sumter County and 15 in Dane County.

Extensive observation by Bureau staff members and comments provided by the supervisors, crew leaders, enumerators, and reviewers served as a basis for determining methods and ways to improve the techniques of the survey. An analysis of the enumeration documents was also made. The following changes for 1970 resulted from this pretest:

1. The 1960 area-segment procedure was adopted in place of the 1968 list procedure for the basic CINCH survey in rural areas, because it was simpler, less expensive, and easier to execute.

2. The number of forms was reduced for simplicity and consolidation. The two inventory-change schedules used in the pretest were combined in one, Form 70H-1, Inventory Changes; the two enumerator's control records became form 70H-4, Interviewer's Control Record; the two folder identification labels became one, Form 70H-5, Folder Identification Label; and two of the precanvass forms became the 70H-6 Segment List Form.

3. The design of the characteristics schedule was altered by rearranging the question order, rewording inquiries for clarity, modifying the printing format (e.g., use of heavy lines, underlines, and italics) for emphasis and instruction.

4. All field materials were revised, taking into account changes in the enumeration procedures and forms. This was especially true with the interviewer's training guide and manual. In addition, a self-study program was adopted.

5. For the 1970 sample in rural areas (inadequate addresses), copies of both the preceding and succeeding pages from the 1970 census listing book would be given to the enumerator to assist in locating the sample unit (in addition to a copy of the page identifying the sample unit).

6. The new-construction procedure was divided in two, according to the type of address involved. New

construction in urban areas was assigned to procedure C; in rural areas, to procedure D.

7. A reduction was made in the number of identification items. This was accomplished by using a master control record for recording several of the identification codes required in tabulation.

Sample Design

Introduction.--The 1970 CINCH survey was designed to produce estimates for the United States, the 4 census regions, and for each of 15 selected SMSA's. The estimates for each of these areas were produced from a multistage probability sample. The first stage of selection involved classifying primary sampling units (PSU's) with similar geographic and demographic characteristics into 357 strata. A PSU consists of a county, group of counties, or an SMSA. There were 112 strata (containing approximately 58 percent of the 1970 population) consisting of only one PSU, and all these PSU's were included in the sample. Such PSU's are termed self-representing, as distinguished from the PSU's in the remaining 245 strata which are termed nonself-representing. These 245 strata consisted of two or more PSU's, and within each of these strata one PSU was selected with probability proportionate to its 1960 census population. The 357 sample PSU's comprised 701 counties and independent cities, with coverage in each of the 50 States and the District of Columbia. These sample PSU's also were used for many of the other sample programs conducted by the Bureau. The principles used in the design and selection of the sample PSU's are discussed in detail in U.S. Bureau of the Census Technical Paper No. 7, The Current Population Survey, A Report on Methodology. The subsequent stages of selection are discussed in detail below.

Sample design for the 15 selected SMSA's.--The sample selected within the 1970 census definition of each of the 15 selected SMSA's was increased to provide more reliable estimates for the principal city and balance of the SMSA. The 1960 census definition of each of these SMSA's corresponded to a self-representing PSU designated in the 357-PSU design, and the entire sample designated within each of these SMSA's also was used in preparing the regional and U.S. estimates.

Within the principal city of each of the 15 selected SMSA's, the sample was selected from two sources: Units enumerated in the 1960 census and units enumerated in the 1970 census. From the first source, a sample of 1960 census 25-percent sample units (in clusters of three units) was designated, and the components of change--"same," conversion, merger, demolition, and other loss--generally were obtained for all units in the structure containing each sample unit. For large structures (more than eight units), the components were obtained for the units on the floor of the structure containing the designated unit. Characteristics as of 1960 were tabulated from the 1960 census record for only the selected unit. Characteristics as of 1970 were obtained for the selected units which were "same" or were created as a result of a conversion or merger involving the selected units. Within these structures, the count and 1970 characteristics of units added to the inventory since 1960 by means other than new construction also were obtained. In the cities of New York, Philadelphia, Buffalo, Miami, Atlanta, Washington, and Chicago, the sample from the 1960 records was selected independently within two strata created for the purpose of improving the survey estimates of the counts and 1960 characteristics of demolished units. One stratum consisted of units in 1960 census tracts reported to have a high proportion of units demolished since the 1960 census. The other stratum contained the units in the remaining 1960 census tracts in the city. The classification of 1960 census tracts was based on estimates of demolished units provided by local sources. Similar strata were not created in the remaining cities, as the necessary estimates of demolitions were either inadequate or indicated that gains in reliability for estimated demolitions would be achieved at the expense of substantially increased sampling error for other components. (The cities selected for stratification included only those for which such stratification would reduce the variance for the estimated number of demolished units by at least 20 percent while limiting the increased variance on the estimated number of conversions and mergers to 10 percent or less.)

The second source of the sample consisted of units enumerated in the 1970 census that were built or added to the housing inventory since the 1960 census. This sample was designated by selecting a larger sample of 1970 census units and eliminating from it those units known to exist as of the 1960 census. Within the part of the principal city covered by the 1970 census list of addresses generated by computer (i.e., the tape address register areas), a systematic sample of units was designated by computer. In the remaining areas, the sample was selected by systematically designating clusters of five 1970 census address serial numbers and searching the 1970 address registers and listing books for the addresses of the housing units corresponding to these serial numbers. The CINCH sample included only those units located in the listing books that also were designated for the 1970 census 20-percent sample. The procedures for eliminating units from this initial sample involved searching the 1960 listing books for the street address of the selected unit. Preliminary operations were performed to determine the 1960 ED corresponding to the 1970 ED containing each of the selected units. Those 1970 census units found in the 1960 census listing books were eliminated from the sample since these units existed at the time of the 1960 census. Each unit not removed from the larger sample by this operation would be visited in the field to determine if the unit was actually built or added to the inventory by other means since the 1960 census. Units built since 1960 having the exact street addresses of units existing in 1960 (termed "new construction on site") were represented by the sample of 1960 census units. For units found to have been built since the 1960 census, interviews would be conducted to obtain information on the structural condition of the unit, plumbing facilities, year the occupant moved in, and characteristics of households that moved into the unit in 1969 or later. The remaining characteristics of units built since 1960 to be shown in the CINCH reports would be obtained by tabulating the 1970 census 20-percent sample data for units reported as built in 1960 or later. For units in whole structures found to have been added to the inventory by means other than new construction, the interviewer would obtain data for all survey characteristics.

In the cities of New York, Philadelphia, Buffalo, Chicago, Miami, Atlanta, Washington, Boston, Houston, Los Angeles, San Francisco, and Seattle, the sample from the second source was selected independently within two strata created for the purpose of reducing the size of the larger sample of 1970 census units. One stratum consisted of units in 1970 census tracts reported to have a high proportion of units built since 1960. The other stratum contained the units in the remaining 1970 census tracts in the city. The classification of 1970 census tracts was based on estimates provided by local sources on the number of units built since 1960. Similar strata were not created for the remaining cities because the information provided by local sources on units built since 1960 was inadequate or indicated that the geographic distribution of units built since 1960 was such that stratification would not be feasible.

Within the portion of the SMSA outside the principal city, the sample was also selected from the 1960 and 1970 census records. The sample of units enumerated in the 1960 census was selected in several steps. The 1960 census ED's containing the selected 25-percent sample units were examined to determine the quality of the addresses recorded in the 1960 census listing books. ED's located in areas where the 1970 census was taken by mail, as well as those having 90 percent or more of the units recorded with a street name and house number, were classified as "urban." The remaining ED's were classified as "rural."

In urban ED's, a sample of 1960 census 25-percent sample units (in clusters of three units) was designated, and the components of change were obtained in the same manner as for units inside the principal city. (See p. 7.)

Previous experience indicated that in 1970 it would be difficult to locate a specified sample unit in rural-type areas when it was identified only by the address recorded in the 1960 census listing book. Counts and 1970 characteristics of the components of change (except demolitions and other losses) therefore would be obtained by interview at all units in existence in 1970 within a sample of land-area segments. The units to be interviewed within these segments were identified by having experienced current-survey interviewers compile a list of the addresses in each segment a few months before the actual CINCH interview. Characteristics as of 1960 would be tabulated for a subset of the units interviewed in each segment. This subset consisted of those units included in the 25-percent sample for the 1960 census. The 1960 census record for each of these units was identified by matching the FOSDIC (Film Optical Sensing Device for Input to Computers) page number recorded for it in the 1960 census listing books to the 1960 census sample detail file. (See p. 10.) Within these segments, units built since 1960 would be eliminated in the tabulation process.

To reduce the cost of selecting and interviewing in rural areas, each land-area segment was constructed to have an expected six (rather than three) 1960 census units, and the number of such segments designated was reduced by one-half. An equal number of clusters of six 1960 census 25-percent sample units also was selected in rural areas to obtain the counts and 1960 characteristics of those lost by demolition or other means. This was necessary, even though such units had to be identified by their 1960 addresses, as the procedure for measuring these components in the designated area segments would require the interviewer first to determine which of the units in the 1960 census listing book were located in the area segment and then to determine which of those units, if any, had been demolished or lost by other means since the 1960 census. After considering the difficulties inherent in implementing and controlling this procedure, it seemed preferable to designate a sample of 1960 census addresses within the rural-type areas for the specific purpose of measuring losses.

In the part of each SMSA outside the principal city, the sample of 1970 census units built or added to the inventory since 1960 was selected as indicated for the principal city, except that no strata of concentrated new construction were created because estimates of units built since 1960 were not available. In addition, the elimination of units existing in 1960 in rural-type areas was accomplished by examining the year-built item on the 1970 census questionnaires for the selected units. This elimination was necessary because it was not feasible to locate the addresses of the selected units in the 1960 census listing books. Units reported as built before 1960 were eliminated from the sample.

Sample design for the balance of the United States.--Within each of the PSU's in the 357-PSU design, excluding those corresponding to the 15 selected SMSA's, the sample units enumerated in the 1960 and 1970 censuses were designated by the same process described above for the area outside the principal cities of those SMSA's.

Sample size.--A total sample of about 215,000 housing units was used to measure the components of inventory change for the United States. The information for the 1970 demographic and housing characteristics was obtained from a subsample of approximately 113,000 units. The sample for the tabulation of the 1960 demographic and housing characteristics from the 1960 census 25-percent sample records was about 95,000.

The designated and interviewed sample sizes for the various CINCH estimates are summarized in table 3.

From this sample design, four enumeration procedures were developed, as indicated in the table below. The particular procedure depended on the source of the sample--1960 or 1970 census addresses--and on the quality of the addresses (i.e., whether or not they could be identified by street name and house number) in the 1960 ED's in which the sample units were located.

Enumeration procedure	1960 sample	1970 sample
Procedure A	Rural areas	
Procedure B	Urban areas	
Procedure C		Urban areas
Procedure D		Rural areas

A detailed description of each procedure is given in the section on enumeration. (See p. 15 ff.)

Table 3. **Approximate Sample Sizes for the 1970 CINCH Survey: the United States and 15 Selected SMSA's**

(figures rounded)

Source of sample	United States		15 Selected SMSA's[3]		
	Total[1]	Outside 15 SMSA's[2]	Total	Principal city	Outside principal city
1960 CENSUS					
Segments designated	33,500	4,800	29,100	15,000	14,100
Units interviewed for 1960 component	183,400	22,500	162,500	100,400	62,100
Units interviewed for 1970 component	176,300	21,100	156,600	96,800	59,800
Units tabulated for 1960 characteristics	94,500	12,500	82,900	43,100	39,800
Units tabulated for 1970 characteristics	92,000	15,000	78,300	38,100	40,200
1970 CENSUS					
Units designated	130,400	10,400	122,000	83,300	38,700
Not eliminated from sample as result of matching	32,500	3,400	30,000	13,100	16,900
Interviewed, reported built 1960 or later	18,500	2,200	16,900	6,500	10,400

[1]Includes only those segments designated in selected SMSA's required for making national samples.
[2]1960 census definition.
[3]1970 census definition.

Data-Collection Forms

Immediately after the results of the pretest had been analyzed and the sample design had been formulated, work began on the design of the data-collection forms for the CINCH survey. To obtain optimum benefit from the Bureau's computers and related facilities, the FOSDIC design was utilized as much as possible. It was not feasible, however, to use the FOSDIC design on all forms because of the unique enumeration and tabulation techniques in the survey. Over 1,000 man-hours and approximately $6,300 were expended in the design of the various CINCH forms. Most envelopes needed in the survey were taken from Census Bureau stock and overprinted as needed.

The two FOSDIC-readable data-collection forms were printed at the Government Printing Office, as follows:

700,000 Form 70H-1, Inventory Changes, 18" x 14 3/4", folded to 9" x 14 3/4", white offset paper, sub. 100, printed in black ink, delivered in March 1971 at a cost of $11,249.

400,000 Form 70H-2, Characteristics, 18" x 14 3/4", folded to 9" x 14 3/4", white offset paper, sub. 100, printed in black ink, delivered in April 1971 at a cost of $5,020.

The basic enumeration document was the form 70H-1, Inventory Changes, which the enumerators completed to determine the components of change for each sample unit for all procedures. Form 70H-2, Characteristics, was filled for a subsample of all 1970 units enumerated on the H-1 form. A third form, 70H-3, Address Sample, was used exclusively in rural areas to record specific losses of structures containing the 1960 sample units. (This form was not FOSDIC-readable.) Facsimiles of these three forms are shown in U.S. Bureau of the Census, Surveys of Components of Inventory Change and Residential Finance: Principal Data-Collection Forms and Procedures, Series PHC(R)-4, Washington, D.C., 1972, and in the statistical reports, 1970 Census of Housing, Components of Inventory Change, Series HC(4). Selected items from these forms are reproduced on pp. 29-40.

Enumerators also used three control forms in the survey. The 70H-4 form, Interviewer's Control Record, was used in both urban and rural areas for the 1960 sample. Basically, it contained special instructions to the enumerators and space to record pertinent information for callbacks. For urban areas, the specific addresses and other related information for the 1960 sample units were entered in a preenumeration operation at the Bureau's facility in Jeffersonville, Ind. A specially printed envelope, form 70H-5, Folder Identification Label, for the 1970 sample (also provided in label form for use on a manila folder for the 1960 sample) contained specific geographic and identification information for all procedures. This information was entered prior to enumeration by either a mechanical or a clerical operation. The envelope (or folder) also was used to store and account for the various forms needed for each sample unit in the survey. In rural areas, for

the 1960 sample only, the form 70H-6, Segment Listing, was used during the summer of 1970 to list all living quarters in the area segments; a subsample of these units was then selected for enumeration in the basic survey.

A number of forms also were developed for use in the postenumeration processing, including one transcription form, 70H-100, which was FOSDIC-readable. Because of space limitations on the 70H-1 and 70H-3 forms, the enumerator had to check or write in some entries for 1960 units classified as "changed" or "lost." These entries were transcribed to the 70H-100 document in Jeffersonville to facilitate computer processing.

PRE-ENUMERATION OPERATIONS—1960 SAMPLE

Screening and Reproducing the 1960 Listing Books

After the 1960 sample ED's were selected, the first major operation was to screen the 1960 census listing books to determine whether the sample ED's were urban or rural. (See section on sample design, p. 7.) Some of the 1960 listing books already had been screened for current surveys conducted during the decade. ED's in general were classified as "urban" for current surveys if 90 percent of the housing units had house numbers and street names in the 1960 listing books. Those ED's which were not used in the current surveys were screened and classified for CINCH as "urban" if 85 percent of the housing units in the 1960 listing books had such addresses. All other ED's were classified as "rural."

The screening operation was performed at the Bureau's Jeffersonville, Ind., facility. In addition to the screening, most of the 1960 listing books had to be reproduced because they were required for other uses which precluded their being sent to the field offices for extended periods of time. Over 700 of the 1960 books had to be manually transcribed from the 100-percent microfilm because the originals either had been lost or were being used elsewhere in the Bureau. The manual transcription required approximately 250 man-days.

Computer Selection of the 1960 Sample Units

After the 1960 sample ED's were classified as either "urban" or "rural," cards were punched. At Bureau headquarters in Suitland, Md., the data on the cards were converted to computer tape which contained this classification along with other identification information for each sample ED. This urban-rural classification tape was collated with a sampling tape which contained pertinent data regarding the selection of specific sample units within the selected 1960 ED's, such as the "start-with" and "take-every" pattern, a unique identification system for the 1960 sample units used for the computation of the weights and variances, among other things. (See chapter 11.)

The final computer operation in the actual selection of the 1960 sample units was to run the sampling tape with the urban-rural classification against a tape containing the 1960 25-percent sample records for the United States. By using the "start-with" and "take-every" pattern, the 1960 sample units were selected and uniquely identified. In urban ED's, the 1960 sample units were selected in clusters of three (three adjacent units on the 1960 25-percent tape), while in the rural ED's clusters of six were used.

Selected population and housing items, along with all identification information from the sampling tape for all 1960 sample units, were placed on another tape, called the master 1960 characteristics tape. In addition, similar population and housing characteristics for five nonsample units, which preceded and succeeded the three 1960 25-percent units selected for the sample in urban ED's, were placed on this tape. Likewise, the same selected characteristics for all housing units in rural ED's were recorded on the same tape, but the six 1960 sample units were uniquely identified. This tape was used in the clerical and computer postenumeration operations.

A few key items from the 1960 master characteristics tape (number of rooms, number of persons, age of head, tenure or vacancy status, and certain other identification items) were arrayed on a computer printout which could be read easily by clerks. This 1960 sample identification printout contained the information for the 1960 sample and nonsample units which was used in the sample-unit identification operation described below.

1960 Sample-Unit Identification

The next major operation in the processing of the 1960 sample was to locate the selected 1960 25-percent units in the 1960 listing books. The purpose of this operation was to determine (1) the specific address of each sample unit, (2) the name of the household head if the unit was occupied, and (3) the number of sample units which could not be located in the 1960 listing books or which, for various reasons, had been duplicated in the 1960 census. The computer printout described above (in which all sample units were designated by control and within-control sequence numbers, e.g., 17-1, 17-2, 17-3, etc.) and the corresponding 1960 listing books were provided for the operation. The geographic identification on the computer printout was checked against corresponding information on the front of the listing book, and a search was made for each FOSDIC page number on the printout. A further verification was made to determine the sample unit for the FOSDIC page number by checking the number of persons in the listing book against the number of persons shown on the printout. The FOSDIC page number of the sample unit was circled in the listing book.

Quality control procedures were required to establish accuracy for the various phases of the sample-unit identification. If no problems were encountered, verification of the 1960 sample-unit identification was performed at a rate of 10 to 20 percent. If microfilm referral was necessary (see below), verification occurred at the rate of 50 to 100 percent.

Special problems.--During the 1960 census (as in 1970), some ED's were administratively split or divided

because the original ED was too large. These split ED's were given alphabetical suffixes in the 1960 listing books (e.g., 11A, 11B, and 11C), and housing units were uniquely identified by FOSDIC page numbers within each separate part or split. On the 1960 25-percent computer tape, however, many of the split ED's were not identified by the suffixes; therefore, all housing units in the split ED's were given the same identification codes as the original ED. This lack of identification for the split ED's could have caused the wrong 1960 sample unit to be identified by the clerks, so corrective action was taken before the 1960 sample-unit identification was begun, as follows:

The sample-unit identification printout was screened in Suitland before the printout was transmitted to Jeffersonville. In general, for ED's which were sufficiently large enough to have more than one hit (a cluster of three 1960 sample units), the "start-with" and "take-every" pattern was examined and compared with the FOSDIC page numbers of the 1960 sample units on the printout. In the comparison, the ED was classified as "split" if the computed "take-every" number was different by 10 or more from the FOSDIC page number for the first 1960 sample unit in the cluster; e.g., the computed "take-every" number was "051" and the FOSDIC page number for the first 1960 sample unit in the cluster of three was "069." For these ED's, "SPLIT" was entered on the sample-unit identification printout page. This marking alerted the clerks so that all 1960 listing books for the split ED were to be used in identifying the sample; e.g., the books for 11A, 11B, and 11C for ED 11. The identification for all 1960 sample units in the split ED's was verified 100 percent.

Methods also were devised to resolve cases of blank digits and out-of-order, missing, duplicate, or transposed FOSDIC numbers. Unresolved cases were referred to supervisors. The microfilm was checked for any problem that could not be resolved by the regular search procedures.

Microfilm search operation--100-percent.--Certain problems of 1960 sample-unit identification which could not be solved by referral to the supervisors were subjected to a search of the 100-percent microfilm. If none of the sample and nonsample units listed on the computer printout had a correct FOSDIC page number listed, a detailed examination of all 1960 microfilm records for the ED was made. If one of the sample or nonsample units on the computer printout had a FOSDIC page number listed, it was used as a key to locate the record on the microfilm. The microfilm record was searched until the correct FOSDIC page number for the unit was located.

In the microfilm operation, the 1960 sample units were identified by comparing the following items on the printout and the microfilmed records: Number of persons in household; month, decade, and year of birth of household head; number of rooms; tenure (if occupied) and vacancy status (if vacant); and value or rent, whichever was applicable. Except for the number of persons and the month the household head was born, there occasionally were entries or blanks for some of the items on the microfilmed records which had been changed or allocated by the computer in 1960. Such items were not used in comparing the entries on the printout with those on the microfilmed record.

Microfilm search operation--25-percent.--For those 1960 sample units which could not be positively identified on the 100-percent microfilm, a search was made on the 25-percent microfilm. The procedures for the 25-percent search operation were similar to those used in the 100-percent microfilm search, except that the characteristics used in the identification were in different locations and the addresses of the 1960 sample units were not on the 25-percent microfilm.

Correcting the master computer printout.--After identification of the 1960 sample units with irregular FOSDIC page numbers (blanks, transpositions, etc.) and after the microfilm search was completed, the 1960 sample-unit identification printout for all resolved sample units was corrected, and units which were duplicated or not located were identified for use in the subsequent weighting and ratio-estimating procedures.

There were approximately 2,900 sample units which required a microfilm search, and in this operation alone about 135 man-days were expended. Because the 1960 sample-unit identification operation was an extremely critical phase of the CINCH program, technicians from Suitland periodically visited Jeffersonville to review and to assist in solving problems, particularly those problems which required a microfilm search.

Preparation of the Area Segments

Concurrently with the 1960 sample-unit identification operation, work began on selecting the area segments for use in rural ED's. The first step was the preparation of the segment maps in Jeffersonville. The segments were delineated on the 1960 census ED maps by roads, highways, rivers, or other geographic boundaries which could be easily identified by the interviewers. Approximately 2,100 segments were required, of which 1,100 were located in the 15 SMSA's and the remainder in the balance of the 357 PSU's. (See section on sample design, p. 7.)

After the maps had been prepared, they were stapled inside large manila folders which contained selected identification items. Each folder was placed in a large envelope along with a 70H-6 segment-listing form.

Clerks in Jeffersonville sent these envelopes to the regional field offices. In July and August 1970, current-survey interviewers canvassed the area segments and listed on the H-6 form all buildings which contained living quarters inside each area segment, the estimated number of housing units in each residential building, and the specific address or location of each building. To assist the regular CINCH enumerators in locating the sample units at the time of enumeration, the interviewers also entered the line number on the segment-listing form for each building.

When the field offices returned the segment maps and H-6 segment-listing forms to Jeffersonville, the sample was selected for enumeration. The selection process

involved use of a document containing such information as the primary sampling unit and segment numbers, the "start-with" and "take-every" pattern, etc. By using this pattern, the clerk determined the sample units and circled the corresponding line numbers on the segment-listing form.

The sampling pattern was computed to yield, in general, six sample units per segment. It was not always possible to obtain this expected yield. When the number of circled lines (sample units) was more than 10 or the total count of expected housing units was more than 20, subsampling procedures were instituted. For multiunit structures, clerks were instructed to telephone the owner, manager, or other knowledgeable person at the address to determine whether the structure consisted of more than one floor, wing, or section. When the clerk was able to obtain information for the building, a new listing of each floor, wing, or section and the number of apartments, rooms, or other living quarters was made on a separate line, and sampling instructions then were applied to the new listing. If the clerk was unable to obtain information for relisting, the original listing was used for sampling.

The selection of the sample in the area segments was verified 100 percent.

Preparation of Enumerators' Folders

While completing the processing of the 1960 sample, clerks in Jeffersonville began preparing and assembling the enumerators' folders for shipment to the field offices. Prior to assembly, a blank H-4 interviewer's control record was glued on the back of each folder, and instructions for filling the H-2 characteristics form were added by use of a rubber stamp. Selected identification items were transcribed from the master control list of assignments to the H-4 interviewer's control record. Among these items were the PSU number, the ED number, control numbers, and FOSDIC page numbers. When there were more than nine sample units in any given ED, an additional control record was attached to the folder.

An H-5 folder identification label was affixed to the front of each folder. The H-5, a preprinted form on which the computer had entered all geographic information, served as identification for each field assignment (procedure type, ED number, etc.) and location of the assignment (city, town, county, State, etc.). Each folder then was filled with the various enumeration forms needed for the assignment.

Before shipping the enumeration materials to the field offices, clerks in Jeffersonville verified all the identification information that had been transcribed from the master control of assignments (form 70H-51) to the interviewer's control record. In addition, they made a content check of each folder to ensure that the correct forms and number of forms had been assembled.

Since the master control of assignment printout contained all indentification information and control numbers, it also was used as a master assignment control record of shipments to and from the field offices. When the content check was completed, the master control assignment list was checked for each control number in a given shipment. Two copies of the control form were included in each shipment; the CINCH unit maintained the original for checking in the completed folders when they were returned from the field offices.

The preparation and assembly for procedure B (1960 sample in urban areas) lasted from June 15 to August 28, 1970. The CINCH unit in Jeffersonville assembled and mailed approximately 26,750 folders to the field offices. The assembly, transcription, and content check of the procedure B folders required about 600 man-days. The assembly, transcription, and content check of the procedure A (1960 sample in rural areas) folders was accomplished during the month of September 1970, requiring 200 man-days.

Allocation of the 1960 Sample to 1970 ED's

Immediately after the 1960 sample had been shipped to the field offices, the unit in Jeffersonville allocated the 1960 sample to 1970 ED's. This was necessary because CINCH data were tabulated and published, in general, by the 1970 census geographic boundaries for the SMSA's and their central cities.

The Suitland CINCH unit prepared a computer printout with all of the 1960 sample units, sorted by PSU and control number within each PSU. This printout also contained the 1960 ED numbers and tract numbers (if available) for each 1960 sample unit. By using the 1960 ED and tract numbers, clerks in Jeffersonville determined the corresponding 1970 ED's and entered them on the printout by methods similar to those used in the allocation of the 1970 sample to the 1960 ED's. (See p. 13.) The allocation operation received a 100-percent independent verification.

The Jeffersonville unit punched cards with the 1960 CINCH identification items, along with the 1970 ED numbers, and sent the cards to Suitland where they were converted to tape and collated with the final 1970 census geographic reference tape to obtain the necessary 1970 geographic information required for tabulation (such as the SMSA code, central city designation, etc.). When the 1970 ED's did not match the 1970 geographic reference tape, the records were returned to the Jeffersonville office for verification of the punching and, when necessary, a reverification of the 1970 ED allocation.

PRE-ENUMERATION OPERATIONS—1970 SAMPLE

Selection of the 1970 Sample

In general, the 1970 sample was selected from urban and rural areas for procedures C and D, respectively. (Procedure C was used to obtain counts and characteristics for units added to the inventory since 1960 by other than new construction and additional characteristics for units built in 1960 or later which were not collected in the 1970 census. Procedure D was used to obtain only additional characteristics for new units built during the past decade.) The 1970 sample was obtained from the computer-generated and manually

prepared ("prelisted") address registers used in mail areas for the 1970 census, as well as from listing books for areas covered by conventional enumeration procedures. The sample was selected either manually or by the computer, depending on the source. To select and process the 1970 sample units, various 1970 census materials were required, including the final address registers for each 1970 ED, ED maps in rural areas, and, in some cases, the 1970 census sample household questionnaires themselves.

Because the 1970 census had higher priority in access to these materials, the selection and processing of the 1970 CINCH sample was done in various phases over an extended period of time. Work on the 1970 sample began in July 1970 and was completed by May 1971, with about 3,000 man-hours required in the CINCH unit alone. The enumeration materials were shipped to the field offices on a flow basis from January through June 1971.

1970 tape address register sample.--The 1970 sample for the computer-generated tape address register areas was selected, for the most part, by the computer in a method similar to the selection of the 1960 sample. The "start-with" and "take-every" pattern was computed, converted to tape, and run against the final address register tapes used in the 1970 census. Selected information for the 1970 sample units, including the specific addresses and other identification items used in enumeration and weighting, was arrayed on computer printouts.

On the last page of the 1970 master control printout for each 1970 work unit or ED, the "take-every" pattern was extended beyond the last unit on the tape. From this extension value, clerks in the CINCH unit selected the sample of 1970 units that had been added to the tape address registers during enumeration of the 1970 census, including those 1970 units found in special places (hotels and institutions, for example).

After the address registers for each of the required 1970 ED's had been obtained, the 1970 sample units were selected by counting the lines enumerated in the address register until the first extension value was reached. The procedure was repeated until all extension values were reached or all the housing units had been expended for each ED. As the extension values were reached, the number of 1970 sample units was tallied and the units were recorded by transcribing the county code, 1970 ED number, serial number, tract, block, last name of head, and the specific address, including the apartment number, city, State, and ZIP code.

1970 listing and conventional sample.-- Because the addresses of housing units were not on tapes for the prelisted and conventional areas, the 1970 sample units in these areas were selected manually after the 1970 census enumeration was complete. An estimated number of 1970 housing units for each of the selected 1970 ED's was obtained, and the "start-with" and "take-every" pattern was computed for this number. For all "take-every" numbers, a range of five consecutive serial numbers was arrayed vertically on a computer printout, along with complete geographic identification information for the 1970 ED's. For example, if the "take-every" number was 15, the range of serial numbers on the printout was 16, 17, 18, 19, and 20. In a manner similar to that used in selecting the tape address register sample, the "take-every" pattern and the corresponding serial number ranges were extended beyond the estimated number of 1970 housing units in the ED, so that the 1970 units which were added or found in special places had an equal probability of selection.

Upon receipt of the address registers and listing books, the clerks searched for the serial number ranges. Once they found the ranges, the clerks designated as the 1970 CINCH sample units those housing units within the serial number ranges for which the 1970 census questionnaires had been completed. The complete address or specific location and the name of the household head (if the unit was occupied) of each 1970 sample unit was transcribed to the computer printout next to the corresponding 1970 serial number.

Allocation of the 1970 Sample Units to 1960 ED's

In order to classify 1970 sample units as urban- or rural-type units and match these units with the units recorded in the 1960 listing books, the 1970 sample units were allocated to the 1960 ED's. The allocation operation was performed mainly by locating the specific addresses of the 1970 sample units on large tract maps which had the 1960 street names and ranges of house numbers, as well as the 1960 ED boundaries. Frequently, the only way the allocation could be accomplished was by overlaying 1970 ED maps on the 1960 ED maps. In addition, many sample units could not be allocated to one specific 1960 ED; therefore, several 1960 ED's were designated for one 1970 sample unit. Because of the many problems encountered in the allocation operation, a 100-percent independent verification was made.

Matching.--After the allocation, the printouts containing the 1970 sample units with the designated 1960 ED's were checked in on a page-by-page basis. This strict control was necessary because the allocation procedure required the removal of each page from its binder. After the check-in operation, the printouts were transmitted on a flow basis to another unit where a matching operating was performed.

To determine the urban-rural classification, the 1960 ED's which contained the 1970 sample units were screened for location of the 1970 units. This operation and the criteria used for the classification were similar to those used in screening the 1960 sample.

For the 1970 sample units in 1960 ED's which were classified as "rural," "type A" was entered on the printout and no match was required. For the 1970 sample units in urban ED's, "type B" was entered on the printout and a match was made with the 1960 listing books.

The cost of enumerating all of the 1970 sample units was not warranted because the proportion of the 1970 sample which had been added to the inventory or built in 1960 or later was small. Therefore, the matching operation in urban areas was instituted to reduce the number of 1970 units which required enumeration. If

the address of a 1970 unit, for example, was 908 Main Street and this address was found in the 1960 listing book, this unit was classified as a "match" and was not processed for enumeration. If the 1970 unit was not found in the 1960 listing book, it was classified as a "nonmatch" and was forwarded for enumeration processing.

A tally of all nonmatched 1970 sample units was maintained. Early in the matching operation it became apparent that the number of nonmatched cases was exceeding the estimated number. This was caused by changes in street names and house numbers which occurred during the decade and by mistakes in the allocation of the 1960 ED's. Several corrective actions were taken; e.g., the use of 1959 or 1960 city directories to supplement the 1960 listing books, the use of the name of the household head in the matching operation, and a reverification of the allocated 1960 ED's for all 1970 sample units which were classified as nonmatches. Despite these corrective actions, the proportion of units added or built in 1960 or later, compared with the total number of 1970 sample units enumerated, was very low. (See sample-size table on p. 9.)

Year-built search.--One more step was performed before the 1970 sample units were processed for transmission to the field offices. Early in the planning it was recognized that it would not be feasible to match the 1970 sample units with the 1960 listing books in rural ED's. Therefore, all 1970 sample units in rural ED's were matched with the corresponding 1970 sample questionnaires to obtain the entry for year built (item H15 on the census questionnaire). If the entry for item H15 was 1960 or later or had been left blank, the 1970 CINCH sample unit was processed for enumeration. If the entry was 1959 or earlier, the 1970 CINCH unit was eliminated from the 1970 sample. Several problems delayed the year-built search operation, such as the unavailability of the 1970 sample questionnaires while census processing was going on, misfiled questionnaires, and the changing of ED and address serial numbers during the processing of the 1970 census.

Reproduction.--After the matching operation and the year-built search were completed, the 1970 sample units selected for enumeration were located in the address registers and listing books, and the line numbers of the 1970 sample units were circled. The page of the address register with the circled 1970 sample was reproduced. Occasionally, the page adjacent to this was also copied so that five addresses preceding and succeeding the sample unit were provided for the enumerators. In addition, the 1970 ED maps for rural ED's were reproduced to assist the enumerators in locating the 1970 sample units.

Preparation of Enumerators' Materials

The preparation and assembly of the CINCH enumerators' assignments for the 1970 sample was basically the same as for the 1960 sample. (See p. 12.) Because the procedures required, in general, that only the specified 1970 sample units be enumerated, fewer enumeration materials were required than were necessary for the 1960 sample. The enumeration materials for the 1970 sample units were placed in large brown envelopes instead of folders. A modified version of the 70H-5 folder identification label was preprinted on the front of each envelope. The label contained space for the transcribed identification items and for pertinent information to be recorded about callbacks by the enumerators, thereby eliminating the need for the enumerator's control record.

After the matching operation and the year-built search, the following information from the 1970 master printout was transcribed to the front of each envelope for each 1970 sample unit selected for enumeration: Type of procedure, PSU number, ED number, tract number, control number, city or town, county, State, ZIP code, and name of head (when available). Instructions on when to fill a 70H-2 characteristics form were stamped in a box on the label, and the following materials were placed inside each envelope: One form 70H-1, Inventory Changes; one form 70H-2, Characteristics; a copy of the address register page(s); and, for rural ED's, a copy of the 1970 ED map.

Since the 1970 sample units selected for enumeration were not determined until the final stages of preenumeration processing, it was not feasible to prepare a master control list of assignments by computer. A similar form (70H-51a) was designed, however, on which the clerks recorded selected identification items for the 1970 sample units prior to transmittal to the field offices.

Verification of the transcription of the items to the front of each envelope, as well as of the master control list, was performed on a 100-percent basis. In addition, a content check was made of all envelopes. The envelopes then were shipped to the field offices, with two copies of the master control list included in each shipment. The original list was maintained by the CINCH unit for check-in purposes.

FIELD ORGANIZATION AND TRAINING

Organization

In order to collect data for the 1970 CINCH survey, 19 temporary field offices were established across the country. Twelve of the CINCH offices were located in the 12 permanent Census Bureau regional offices (data collection centers), eight of which were located in CINCH SMSA's. In addition, a field office was set up in each of the seven other SMSA's where regional offices were not located, using space previously occupied by census district offices. This space usually was shared with the Census Employment Survey. (See chapter 12.)

Each SMSA office was staffed with 1 CINCH area supervisor, 2 crew leaders, 1 supervisory clerk, 5 regular clerks, and about 30 enumerators. The personnel for the SMSA offices generally were drawn from the 1970 decennial census staff. A regional office supervisor and, where the workload warranted, regional technicians were provided from the regular regional staff to supervise CINCH operations in the areas outside the CINCH SMSA areas and to oversee the entire CINCH operation in both SMSA and non-SMSA offices.

In four of the regional offices not in CINCH SMSA's, enumeration and field processing were performed by current survey interviewers and regular regional office staff.

The CINCH staff was paid at the following hourly rates: Supervisor, $5.30; crew leaders, $3.20; head clerks, $3.20; interviewers (enumerators), $2.65; and clerks, $2.65.

Training

Several manuals, training guides, and control forms were designed in order to establish and operate the regional and SMSA offices and to train personnel. They included the following:

1. Interviewer's Initial Training, a home-study program designed to introduce CINCH staff members to basic CINCH concepts, forms, and enumeration procedures prior to actual classroom training.
2. Training guides, provided for all levels of the training operation.
3. Interviewer's Manual, a reference book that explained all procedures, definitions, and forms, used for all field enumeration.
4. Crew Leader's Manual, a reference manual compiled to familiarize the crew leader with job tasks and responsibilities, CINCH concepts, and enumeration procedures.
5. Edit Manual, a reference book used by the office clerks for editing CINCH enumeration forms.
6. Office Manual, written to guide the area supervisor in establishing the area office and in specifying job duties and responsibilities.

These materials were prepared in the following quantities:

Form No.	Title	Quantity
70H-8	Interviewer's Manual	2,000
70H-9	Interviewer's Initial Training, Home Study [Procedures A and B]	2,000
70H-60	Office Manual	500
70H-61	Crew Leader's Manual	500
70H-62	Edit Manual	500
70H-67	Guide for Training CINCH Interviewers	300
70H-67.1	Interviewer's Workbook	1,500
70H-68	Guide for Training CINCH Supervisors	as needed
70H-72	Guide for Training CINCH Edit Clerks	300
70H-74	CINCH Home Study, Procedures C and D	2,000

CINCH personnel were trained in four stages between September and December 1970:

1. After completing the interviewers' home-study course September 8-11 for orientation in the basic enumeration procedures of the survey, two regional office supervisors from each census region attended a session in Suitland September 14-17 for more intensive training in all enumeration and field office procedures, using materials prepared for training the area supervisors (see below). This training included 1 day of enumerating actual assignments in the Washington, D.C., area and a half-day of discussion which clarified procedures and concepts. The field offices generally were set up 1 week after the regional office supervisors' training.

2. On September 21-25, following a home-study course, the CINCH program supervisor, supervisory clerk, and three crew leaders from each CINCH SMSA were trained by a regional office supervisor in the respective regional offices. Current survey enumerators assigned to the CINCH survey also attended these sessions. This training session also included a day of enumerating actual cases. Whenever possible, Bureau technicians from Suitland observed the training.

3. Enumerators completed the preliminary home-study course and then received 2 1/2 days of classroom training from their respective crew leaders in the area offices. Training for enumerators was divided into three sessions. The SMSA's were split into two groups, with enumerators from the first group receiving training during the week of October 12 and those from the other group the week of October 19. Enumerators for the remaining areas were trained in the week of October 26. Those enumerators assigned the 1970 sample units (procedures C and D) received additional training in a special home-study course in December 1970. The main reason why enumerator training was divided into three sessions was to ensure that regional office supervisory personnel could observe and monitor the sessions. Again, Bureau technicians assisted the regional staff in conducting the observations.

4. Editors were trained in early November after the survey had begun. Five enumerators, selected from those who had completed interviewing assignments, were given 4 hours of training in editing by the supervisory clerk at the area office, followed by on-the-job training for the remainder of the working day.

ENUMERATION

Procedures

From October 1970 to March 1971, CINCH interviewers enumerated the 1960 sample under procedures A and B in the 15 SMSA's, while current survey enumerators worked in the remaining sample areas. The bulk of the 1960 sample was completed by December 1970. Enumeration of the 1970 sample, under procedures C and D, began in January 1971 and was completed by the middle of July 1971.

Three basic forms were used to collect data for the enumeration. (For content, see pp. 29-40.)

1. Form 70H-1, Inventory Changes. The enumerator completed this basic inventory document for all housing units in the survey. The form was divided into an identification section, five interviewer sec-

tions (A through E), and one section for office use (section X). Before the interview began, the interviewer filled the identification section from information on the folder identification label. Section A, used to determine which units to enumerate in multiunit buildings, was completed in procedure B only.

In section B, the enumerator was to enter the addresses and names of household heads for the housing units in the structure containing the sample unit shown in the 1960 census listing book and information about the changes which had occurred since 1960, including the current use of the site of the 1960 structure, if it no longer existed, and public or private ownership of such sites.

Section C, used in all procedures, contained probing questions which the enumerator used to identify and properly classify the 1970 living quarters to be listed in section D. Section D, completed in all procedures, was used to list the actual 1970 housing units, their addresses, names of household heads, number of occupants, types of quarters, number of housing units in the structure, and year built. The procedure A or B interviewer, after describing the 1970 unit and comparing it with the corresponding 1960 unit, indicated the appropriate component of change in section D and also in section B. The enumerator also indicated in section D, item 14, whether a characteristics form 70H-2 (see below) was to be completed for this unit. Space was provided on the H-1 form for information on eight housing units; a continuation H-1 form was prepared when the number of 1970 units exceeded eight.

The method of preparing the H-1 form varied according to type of enumeration procedure. In procedure B (urban areas), the interviewer transcribed the address and the household head's name for each unit in the structure containing the sample unit from the 1960 listing books to section B of the H-1 form, compared this information with the current status of the unit (as entered in section D), and determined the appropriate components of change. When there were nine or more units in the building, the interviewer selected a subsample according to specific instructions and limited the section D enumeration to the subsampled 1970 units.

When a building was newly constructed (built in 1960 or later) or moved to the site of a 1960 building with the identical street address of the 1960 sample unit (which had been demolished or burned, for example) and had four or more units, special instructions were given to the enumerator for preparing the H-1. These H-1 forms were referred to the crew leader, who consulted his crew leader's manual for procedures in subsampling the building. When a building contained units in which all 1960 units were converted or merged, so that the 1970 unit(s) could not be related directly to any of the corresponding 1960 units, and there were eight or less 1970 units, all units were enumerated; if there were nine or more 1970 units, the case was referred to the crew leader for subsampling.

Procedure A (rural areas) was performed in essentially the same manner as procedure B. The enumerator visited the addresses of the sample units identified on the segment-listing form prepared prior to the start of the CINCH survey. The enumerator then transcribed information from the 1960 census listing book for the sample units listed in section B and the current data for the units listed in section D. The section D entries then were compared with the 1960 data in section B for the corresponding units to determine the components of change and the remaining appropriate entries to be made in section B of the H-1 form.

Inasmuch as procedures C and D (for the 1970 sample) were used to obtain information about units constructed from 1960 to 1970 (and, in the case of procedure C, units otherwise added to the inventory during this period), completion of the 70H-1 form under these two procedures generally was limited to section D (1970 data). However, when changes had occurred in the 1970 sample unit since the April 1970 census, or if the interview revealed that the unit had actually been built prior to 1960, the enumerator was instructed to fill section B as well, using information supplied by the respondent.

2. Form 70H-2, Characteristics. This form was used to obtain additional information for specified types of housing units in the CINCH sample and their occupants. For procedure A (1960 sample in rural areas), the H-2 form was to be completed for all sample units except those classified as "new construction." For procedure B (1960 sample in urban areas), the form was to be completed only for units in the 1970 inventory enumerated in section D of the H-1 form which were classified as "same," "conversion," or "merger" and corresponded to the 1960 CINCH sample units. The H-2 form also was to be completed for all units moved to or newly constructed on the site of the 1960 sample units, with the same street address, or for units created from group quarters or nonresidential space in buildings containing the 1960 CINCH sample units.

The H-2 form was completed for all newly constructed and added units for procedure C (1970 sample in urban areas) and for all new-construction units enumerated in procedure D (1970 sample in rural areas).

The H-2 form consisted of identification items; 41 questions about characteristics of the occupants, the housing unit, the structure, and, in the case of recent movers, the previous residence; space for the enumerator's comments; and space for FOSDIC coding in Jeffersonville of the data collected. Identification entries were copied from form 70H-1 and the folder identification label. The enumerator asked the questions on characteristics in numerical order. Space was provided on the form to list 10 occupants per unit; when more than 10 persons occupied one unit, he used a continuation of the same form.

The enumerator used a flash card to aid the respondent in answering questions on the value of the property and the main reason for moving from a previous address.

3. Form 70H-3, Address Sample.--This form was used only in procedure A (1960 sample in rural areas)

to identify structures which contained CINCH sample units in 1960 but which were no longer in existence or no longer contained housing units in 1970. Usually, the enumerator completed the form for six addresses located in the same 1960 ED as the land-area segment assigned. Using information on his interviewer's control record, the enumerator located each sample housing unit in the 1960 census listing book from which he then transcribed the address for each unit and, if occupied, the name of the 1960 household head. He was to determine whether or not the building still existed and/or still contained housing units and, if not, the reason for the loss (i.e., the component of change). For structures no longer in existence, the enumerator also determined the current use of the site and the public or private ownership of such sites. Space was provided to list six units on each form.

Callbacks

Except in unusual cases, the interviewer was instructed that callbacks generally were unnecessary for the H-1 inventory changes form because a landlord, superintendent, or neighbor usually could supply the required information. Because of the nature of the items on the H-2 characteristics form, the enumerator was required to make up to three visits to the housing unit in an attempt to complete the form. If only one or two items lacked information, this could be obtained by telephone. When using the telephone to get the information, the enumerator was instructed to get the respondent's consent and, if necessary, to call at an appointed time.

Boarded-Up Units

The increase in the number of housing units boarded up in recent years for various reasons generated considerable demand for more definite information about this phenomenon in the latter part of the 1960's. Primary interest was centered on those units which owners could not continue to maintain in the rental market because of operating, maintenance, and tax costs. These units had been removed from the rental market and boarded up for protection against vandalism and in compliance with local safety regulations. Because it was not feasible to obtain information on boarded-up units in the 1970 census, it was decided that an effort should be made in the CINCH survey to collect these data.

Late in the planning of the survey, the category "boarded up" was added as a type of loss on the H-1 and H-3 forms, and the planned enumeration procedures were modified slightly to identify such units. Enumerators were instructed to record a unit as "boarded up" only after ascertaining that it was not unfit for human habitation, condemned, or scheduled to be demolished. Because these units were inaccessible to the enumerators, 1970 housing characteristics could not be obtained for them.

As part of the field-edit operation, information for all boarded-up units was transcribed from the H-1 and H-3 forms to CINCH Form 70H-7, Record of Boarded-Up Buildings. This form, containing geographic identification and addresses of the specific units, provided space for indicating the current ownership, the final component, and the structural condition of the boarded-up units. The H-7 forms were transmitted to Suitland, where they were screened by Bureau technicians.

Initially, it was planned to have technical staff from the Bureau then visit local housing authorities to ascertain if these boarded-up units should be counted as losses or retained in the 1970 inventory. For those units that were to be included in the current inventory, structural condition was to be determined by personal visits. Primarily due to timing, it was decided to solicit the assistance of local building and housing authorities to provide more recent information on the status of the boarded-up units. Accordingly, H-7 forms were sent to building and housing officials in about 80 local jurisdictions throughout the country, mainly in urban areas. (Boarded-up units in rural areas were excluded from the followup operation because of the small number.) These forms were accompanied by a letter explaining the reason for this operation, along with instructions for completing the forms. The local authorities were asked to determine from their records whether the boarded-up units listed on the forms should be classified as "unfit," "condemned," "scheduled to be demolished," or "lost through other means." If there were no records of impending or future actions, the status of the boarded-up units was to be left blank, and information on the structural condition was entered if available. Completed H-7 forms were returned to Suitland for review, after which they were transmitted to Jeffersonville.

Quality Control

The crew leaders followed certain procedures to secure and maintain the quality of interviewing: (1) Direct observation of all interviewers during their initial assignments, (2) evaluation of the edit forms covering the completed work, (3) additional observation by the supervisor or crew leader when required, and (4) verification of the enumeration by reinterview.

Observation of interviewers.--The assignments for interviewing were scheduled so that each interviewer was observed by the supervisors, crew leaders, or Bureau personnel from Suitland during the interviewing on initial assignments for each procedure (A, B, C, and D).

Editing.--Specially trained clerks, who had received training and experience as enumerators, completed an edit form for each enumerator's assignment. The edit consisted of reviewing the completed forms for consistency, accuracy, completeness, and acceptability. The clerks examined in detail the 1970 comparison items, as well as the selection of the sample for the H-2 characteristics form. In addition, they thoroughly reviewed the assignment of the 1970 housing-unit numbers, the addresses, and adequacy of the FOSDIC markings on the H-2 forms.

The editors corrected some discrepancies on the basis of information provided by the interviewers or by telephone calls to the respondents. In the case of assignments for which there were several missing entries, they returned the material for followup interviewing. When the case was returned from followup interviewing, only the items which had been questioned or were in error were reedited.

Reobservation of interviewers.--If an interviewer appeared particularly inaccurate during the initial observation, or if a consistent pattern of errors was found in his work, the crew leader scheduled the interviewer for reobservation during which he pointed out the interviewer's mistakes and referred him to the manual when necessary. When the quality of his work continued to be below acceptable standards, the interviewer was reassigned or dismissed.

Reinterviews.--A sample of housing units was selected for reinterview. The reinterview was done only for the 1960 sample and was limited to the 15 SMSA's; most of the assignments outside the SMSA's were handled by experienced current-survey enumerators. The sample was selected from assignments which had passed edit and were ready for shipment to Jeffersonville. Because the emphasis in the CINCH program was placed on "lost" units, the sample for verifying losses was on a cumulative basis and was conducted for about one-third of the "lost" units. The area supervisors and the crew leaders conducted the verification which was an independent operation; i.e., the supervisors and crew leaders conducted the interviews for all required units and completed new forms H-1 (and H-3 for procedure A assignments). The information on the H-2 characteristics form was not verified.

Field Offices

The field offices were opened in late September 1970. Before actual enumeration started, the following preparations were made for the 1960 sample:

1. Location of assignments.--Areas that had large amounts of work were identified on large grid maps. The locations were posted on the maps by referring to the assignment folders for each suburb or city in each area.

2. Location of interviewers.--The location of the residence of each interviewer was identified on the maps. Marking these locations aided the supervisors and crew leaders in making assignments that were close to the interviewers' homes.

3. Crew-leader districts.--The area that was assigned to each crew leader was outlined on the maps.

4. Canvass of areas of expected change.--Areas where large amounts of change had taken place were spotted on the maps; e.g., a certain area in a downtown section demolished for urban renewal. Telephone calls or visits to the appropriate local housing officials were made to determine the areas in which changes in housing units had occurred. When time allowed, crew leaders and area supervisors drove through their SMSA areas to investigate and make notes of demolished areas, areas where many buildings had been condemned or boarded up, or areas where buildings had recently been replaced. The crew leaders later accompanied the interviewers to these areas to make certain that correct procedures were followed.

After enumeration began, the primary function of the office staff was to control the enumerators' assignments and to edit and ship the completed work. They started shipping completed materials to Jeffersonville around the end of November 1970. A shipping transmittal, prepared each Friday for the cases which had passed edit during the week, was included in each shipment.

A progress and cost report was maintained and completed by the supervisory clerk who obtained information for this report from the master control of assignment lists, the interviewer evaluation reports, the transmittal records, and the payroll forms for the supervisory and office staff.

When it was determined that only a small number of assignments remained and that the regional office could administer them, the SMSA office was closed. Listed below are the dates that each SMSA office closed: (all dates in 1971):

SMSA office	Closing date
Atlanta	Feb. 28
Boston	Feb. 5
Buffalo	Feb. 5
Chicago	Feb. 28
Cleveland	Feb. 12
Detroit	Feb. 28
Houston	Feb. 5
Los Angeles	Feb. 5
Miami	Feb. 26
New York	Feb. 8
Philadelphia	Feb. 16
St. Louis	Feb. 5
San Francisco	Feb. 26
Seattle	Feb. 24
Washington, D.C.	Jan. 29

The regional offices, some of which were responsible for assignments for non-SMSA areas as well, continued to handle CINCH cases as part of their regular workload until mid-July 1971, when all remaining cases were closed out.

Evaluation

The majority of the CINCH supervisory personnel, including crew leaders and editing clerks, had held similar positions in the 1970 census. Wherever possible, interviewers with 1970 census experience were also recruited for the CINCH survey. Very few interviewers resigned; thus the training of new interviewers was held to a minimum.

The bulk of the enumeration for the 1960 sample was completed on schedule by December 1970. A few assignments, particularly in areas outside the 15 SMSA's, were delayed, primarily because materials from Jeffersonville were late in arriving at the regional offices and the workload of current interviewers was heavy. The few problems encountered in the field consisted primarily of (1) inconsistencies between the number of units recorded in the 1960 listing books and the actual number which existed in the buildings according to information from reliable respondents (owners, managers, etc.) and (2) difficulties in matching rural housing units with 1960 listing book addresses.

The delay in selecting and preparing the materials for the 1970 sample did create some problems. The enumeration activities for most of the 1970 sample had to be transferred to the regional offices because it was not economically feasible to maintain the CINCH offices in the 15 SMSA's for the extended period required. Another difficulty was that the staff had to be drastically reduced. These problems were minimized, however, by transmitting enumeration materials to the regional offices on a flow basis and retaining a small group of experienced interviewers to complete this work. The 1970 sample, besides being small, had less complex enumeration procedures than the 1960 sample.

The overall nonresponse rate (refusals, no one at home, etc.) for the characteristics schedule was low. For occupied units which were interviewed, the highest nonresponse rates occurred in the items on family income, value of property, and the cost of utilities.

CLERICAL POST-ENUMERATION OPERATION

Receipt and Control

A receipt and control operation was established in Jeffersonville to ensure that all materials were received from the field offices and to provide records so that an orderly flow of materials to each major processing phase could be maintained. A master control computer printout of each control number for the 1960 and 1970 samples was created to record the location of each folder or envelope during the many steps in the clerical operation.

The Jeffersonville unit received from the regional offices in weekly shipments most folders for procedures A and B from December 1970 through March 1971 and the envelopes for procedures C and D from May through July 1971. When the folders and envelopes were received, the first step was to check the identification information on the field transmittal form included in each shipment against the information on the folder identification lables. Discrepancies were referred to subject-matter technicians for resolution and, if necessary, a problem-referral form was sent to the field office.

As an added control measure, Jeffersonville personnel checked off each folder and envelope, entering the date of receipt on the master control-of-assignments at the same time. They then placed a processing label on each folder and envelope, with a different color for each procedure. The processing label contained space to record a work-unit number for each group of folders or envelopes, the SMSA codes, the dates that each major processing step was completed, etc.

Following the labeling and the assigning of work-unit numbers, Jeffersonville clerks made a content check of each folder or envelope. The purpose of the content check was to ensure that all enumeration materials for a given folder or envelope were present. In addition to the content check, they made a simple review of the forms. For example, they checked for the presence of an H-2 characteristics form for every "yes" marked in item 14 (a screening question to identify cases where an H-2 form was needed) of the H-1 inventory changes form. For ease in handling, the clerks then sorted the cases by procedure type and bound them into groups of 10 folders or 25 envelopes.

About 90 man-days were required to accomplish this phase of processing of the procedures A and B folders; processing procedures C and D envelopes required about 30 man-days.

Review and Transcription

To improve and maintain the quality of the data and to prepare the forms for the microfilming and computer-editing operations that followed, clerical review and transcription were performed for all enumeration procedures. For the 1960 sample (procedures A and B), the review and the transcription were done as completely independent operations, but they were combined for the 1970 sample (procedures C and D).

Training.--Training of CINCH clerical personnel for the clerical review and transcription operations was conducted, for the most part, by subject-matter technicians and personnel who had developed the procedures. The training classes usually lasted from 1 1/2 to 2 days, divided into five sessions. Two groups, each consisting of approximately 20 clerks and 1 supervisor, received training on review of procedure B; the first group in the week of May 11, 1971, and the other group in the week of June 5. Clerks designated for the review of procedure A cases were trained in the week of August 16. Form transcription also was divided into two training sessions; the first class was conducted in the week of August 23; the other in the week of September 20. The clerks assigned to the edit and transcription operation for procedures C and D received special training in the week of November 15, 1971.

Four experienced editors were trained to code the location of the previous residence of "recent movers." Four more clerks were given specialized training for the review and coding of selected income items. Supervisors were given special training for handling problems that were referred to them during all phases of the clerical operations.

Training procedures and aids, including dummy folders containing all enumeration forms, were provided for all

levels of the training operations. Trainers read the procedures aloud to the groups and led them in practice exercises for editing and coding.

Clerical review.--In all procedures, clerks performed a complete review for every unit entered on the H-1 inventory changes form, although the extent of the review varied for each procedure. In general, the clerks related items in editing the comparison items, year built, year of change, and, when necessary, additional items such as the address and number of housing units in the structure. Since the component of change was the most critical item in the survey, it was given a complete and thorough edit. The interviewer's notes in the comments section of the form were also used in editing various items.

As part of the general review, the clerks examined the FOSDIC markings for density and darkened the entries when necessary. Torn or mutilated forms were recopied.

As a final step in the editing of the H-1 form, the clerks used a consistency chart (see table 4) to match entries in questions 3 or 4 (1970 status) in section B and the entries in questions 5 (1970 unit number), 12 (year built), and 13 (comparison and year of change) in section D. The entries in sections B and D, whether entered by the enumerator or changed by the clerk, had to correspond to one of the patterns on the consistency chart; if not, the H-1 form was referred to a supervisor.

The review of the H-1 forms was essentially the same for all procedures and, in general, consisted of the basic steps described above. There were, however, a few major differences for each procedure, outlined below.

Procedure A.--For procedure A it was necessary to verify that the units circled on the segment-listing form had been enumerated. The units that were not circled but were entered on the H-1 form were voided. The units that were circled on the listing form but not entered on the H-1 were referred to technicians; most of these units also were voided, although a few were returned to the field for enumeration. All 1970 units listed in section D which were built in 1960 or later and all 1960 units in

Table 4. Consistent Entries in Sections B and D on Form 70H-1, Inventory Change

Line No.	SECTION B					SECTION D			
	Item 2 Address	Item 3a Status	Item 3b Current use of site	Item 4a Status	Item 4b[1] 1970 Unit no.	Item 5[1] 1970 Unit no.	Item 7 Address	Item 12 Year built	Item 13a Comparison 1960-70
1.	Entry	-	-	S (Same)	1	1	Entry	1960 or earlier	Same
2.	Entry	-	-	CONVerted	1,2	1	Entry	1960 or earlier	Conversion[2]
						2	Entry	1960 or earlier	Conversion[2]
3.	Entry	-	-	MERged[3]	1	1	Entry	1960 or earlier	Merger
	Entry	-	-	MERged[3]	1				
4.	-	-	-	-	-	1	Entry	1960 or earlier	From group quarters
5.	-	-	-	-	-	1	Entry	1960 or earlier	From nonresidential
6.	-	-	-	-	-	1	Entry	1960 or earlier	Moved to site
7.	-	-	-	-	-	1	Entry	1960 or later	New construction
8.	Entry	-	-	TO GQ	1	1	Entry	-	-
9.	Entry	DEMOLished, or MOVED from site, or OTHER	Entry	-	-	-	-	-	-
10.	Entry	TO NONRESidential	-	-	-	-	-	-	-
11.	Entry	UNFIT	-	-	-	-	-	-	-
12.	Entry	CONDemned	-	-	-	-	-	-	-
13.	Entry	BOARDED UP	-	-	-	-	-	-	-
14.	Entry	DEMOLished, or MOVED from site, or OTHER	Entry	-	-	1	Entry	1960 or later	New construction[4]
15.	Entry	DEMOLished, or MOVED from site, or OTHER	Entry	-	-	1	Entry	1960 or earlier	Moved to site

[1]Unit numbers in items 4b and 5 must match, but do not have to be 1 or 2.

[2]For each unit classified as "converted" in item 4a, there must be two or more corresponding units in item 13a.

[3]For each unit classified as "merger" in item 13a, there must be two or more corresponding units in item 4a.

[4]For a unit classified as "demolished," "moved from site," or "other" in item 3a, one or more new construction units may be listed in item 13a.

section B which were whole-structure losses (demolished, moved from site, etc.) were also voided on the H-1 forms.

Procedure B.--A major phase in reviewing the H-1 forms for procedure B was to verify that the designated 1960 sample units were enumerated. The FOSDIC page numbers and the specific addresses of the 1960 sample units on the enumerator's control record were compared with the entries in section B of the H-1 forms. If the correct buildings had not been enumerated, the folders were returned to the field for reenumeration. The 1960 census listing books were checked to ensure that all units in buildings containing the 1960 sample units were recorded in section B of the H-1 forms. After consulting the supervisors, the clerks corrected discrepancies by either adding or deleting 1960 units in section B. For large buildings (nine or more units), they examined in detail the sampling pattern to ensure that the proper units had been enumerated. The sampling pattern also was verified for buildings which had been entirely converted or merged, as well as for buildings which had been newly built on or moved to the site of the building containing the 1960 sample units (which no longer existed). When the sampling patterns were different, the clerks referred the H-1 forms to technicians who determined whether the errors could be corrected in the weighting operation or whether the forms should be returned to the field for reenumeration.

Procedures C and D.--The clerks verified that the correct 1970 units had been enumerated by checking the specific address entered on the folder identification lable with the address(es) on the H-1 forms. When discrepancies were noted, the clerk entered them on a list of the 1970 sample units incorrectly enumerated which was later used to adjust the weighting. No 1970 sample units were returned to the field for corrections.

Since the 1970 sample was designed to obtain, in general, information on additions and new units built since 1960, all H-1 forms with "same," "conversion," or "merger" marked for the component (question 13a) were voided for both procedures; for procedure D, H-1 forms with "from nonresidential use," "from group quarters," or "moved to site" marked as the component also were voided.

The editing of the H-2 characteristics forms was the same for all procedures, except for the determination of when an H-2 form was required. A consistency check was made between the H-1 and H-2 forms to determine if they had been filled for the correct sample units. If an H-2 form was completed for the wrong sample unit, it was voided. A procedure in the ratio estimation operation was instituted to adjust for those units which should have had an H-2 form completed or for which there was not enough information to process; i.e., noninterviews, refusals, etc. (See section on weighting and estimation, p. 26).

Although the H-2 form was basically a FOSDIC document, some entries for the household and the previous residence were recorded in a conventional manner (checked or written in) by the enumerators. The following written entries were among those coded in FOSDIC on the back of the H-2 forms by the clerks: Age of household head; age of wife; number of own children under 18 years; number of other relatives and nonrelatives, including the number of roomers, boarders, and lodgers in the household; and family income. The data on family income however, were, edited clerically before coding. When any part of the income questions was filled, a clerical edit was made on the income items which the enumerators had left blank. In general, published and unpublished income data by sex, age, race of household head, and geographic regions (South, and all other regions) obtained from the Income Supplement to the Current Population Survey (Series P-60) were used in the editing process. If all income questions were blank, family income was edited by the computer.

Another item which was edited thoroughly before coding was the previous residence of "recent movers." For all households that had moved in 1969 or later, the complete address of the previous housing unit (street number and name, city or town, county, and State) was recorded. The location of the previous unit in relation to the location of the present unit was coded (e.g., "outside SMSA, different State"). Because three of the SMSA's had two central cities, when "in central city" was entered under "in this SMSA" for San Francisco-Oakland, Los Angeles-Long Beach, or Seattle-Everett, a special code was entered in item VIII on page 4 of the H-2 form. The reason for the extra entries was that for each of the respective SMSA reports, data for Oakland, Long Beach, and Everett were included in the "outside central city" tabulations, while for the United States report these cities were tabulated as "inside central city."

To perform the previous-residence coding operation, the following materials were used: Listings of independent cities, counties, boroughs in New York City, towns in the New England States, 1970 SMSA's by State and county, address coding guides, and maps.

The H-3 address sample form was used to collect information on 1960 units that were lost to the inventory in rural areas (procedure A). To ensure that correct units had been enumerated, the addresses of the 1960 sample units were located in the 1960 census listing books by using the FOSDIC page numbers entered on the enumerator's control record. The addresses then were compared with those entered by the enumerators on the H-3 address sample form. When discrepancies appeared, the addresses were referred to the technicians, who decided whether adjustments for the errors were to be made in the weighting or whether the forms were to be returned to the field. Other editing included the coding of the current use of site (office building, highway, park, etc.) for each 1960 sample building which no longer existed. The last step in the editing of the H-3 forms was to identify those buildings which no longer existed but which had contained two or more 1960 sample units. When this occurred, the number of 1960 units (2, 3, 4, etc.) was entered in the office-use column and was used to adjust the weights of the 1960 sample units.

Identification of the 1960 Sample Units in Area Segments

The 1960 characteristics for all components were tabulated from the 1960 25-percent census records. In urban areas (procedure B), the 1960 sample units were uniquely identified by a control number and a within-ED sequence control number (e.g., 205-1, 205-2, 205-3) during the sample selection. This information was used in a computer collation operation to designate the 1960 25-percent records to be tabulated by each component. This identification operation could not be done for the 1960 sample units in rural areas (procedure A) until after the enumeration, because the units enumerated in the area segments included some which had not been designated for the 25-percent sample in 1960.

For ED's in which the area segments were located, the clerks were provided with a computer printout which contained selected characteristics for all 1960 units in the ED. Each 1960 unit was uniquely identified by a within-ED sequence number. The 1960 identification was performed using this printout, the H-1 forms, and the 1960 listing books.

Every 1960 unit that was enumerated on the H-1 form had a sample-key letter and a FOSDIC page number. For every 1960 unit that had a sample-key letter "A" (indicating a 25-percent sample unit), its within-ED sequence number was located on the printout and transcribed to the H-1 form. Since the within-ED sequence number was the only means for linking the 1960 and 1970 records for the sample unit in the computer, it was crucial that the clerks locate the correct number. To ensure that the correct 1960 unit had been identified, selected items on the H-1 forms were compared with similar items on the computer printout. In a few cases, data from the 1960 25-percent microfilms were used in the identification operation. This operation received a 100-percent independent verification and was accomplished in about 54 man-days.

Transcription

In order to prepare the data on counts and characteristics of the components for computer processing, a transcription operation was performed. Because entries in section B of the H-1 and all entries on the H-3 were conventional (checked or written in), selected information was transcribed to a transcription form (H-100) which was designed completely in FOSDIC format. For 1960 units which were converted, merged, demolished, moved from site, or lost by other means, selected data (identification items, type of component, etc.) were transcribed to this form. Except for the type of component, similar information was transcribed to section X of the H-1 forms from the written entries in the identification questions or from entries made during the editing operation. Similar information, including the type of component and selected characteristics, was transcribed onto the back page of the H-2 forms.

Timing

From May 1971 to January 1972, CINCH clerks performed the review and transcription operations for all enumeration procedures:

Operation	Started	Completed	Man-days
Clerical review			
Procedure B	May 11, 1971	Sep. 10, 1971	1,170
Procedure A	Aug. 16, 1971	Sep. 10, 1971	140
Transcription			
Procedure B	Sep. 11, 1971	Nov. 12, 1971	1,260
Procedure A	Nov. 9, 1971	Dec. 30, 1971	280
Review and transcription			
Procedures C and D	Nov. 1971	Jan. 1972	205

Verification

A verification procedure for each of the major clerical operations was instituted to improve and control the quality of the work. Also, the results were used to establish criteria on acceptable performance for the editors, coders, and transcribers.

A dependent verification of the basic H-1 and H-2 forms was done. Each editor's and transcriber's work was 100-percent verified until a work unit had an average of less than two errors per 100 items. Errors were recorded and, during the qualifying period, were pointed out to the editors and transcribers individually. If the clerical personnel did not meet the minimum requirement, they were retrained or reassigned. After the qualification period, verification of the editing and transcription was done on a sample basis--first a 20-percent and then a 5-percent verification.

Special Situations

Most problems in the editing and transcription operations were resolved by the supervisors and technicians. A few problems, however, required special methods and procedures.

Field "Cannot Locate's".--During field enumeration, several buildings containing the 1960 sample units could not be located. These sample units were classified as "cannot locate's" and were added to the list of 1960 sample units which were not found in the preenumeration 1960 sample-unit identification operation. A procedure was developed in the weighting and ratio-estimating operation to adjust for this problem.

Discrepancies in the 1960 listing books.--The number of units in some structures reported by the 1960 enumerators often conflicted with the actual number in 1960 based on information obtained by CINCH enumerators from the owners, resident managers, etc. For example, the 1960 listing book might have had 10 units listed for a particular structure, while the owner stated to the CINCH enumerator in 1970 or 1971 that there were only 5 units in 1960. In these situations, the CINCH enumerator listed only five units on the H-1 form and

entered the reason for the discrepancy in the "comments" section. These H-1 forms were referred to technicians who conducted detailed examinations of the 1960 census records. In most cases the evidence substantiated the CINCH enumerators' findings, and the components and the number of units in the 1960 structures were so recorded on the H-1 forms.

Boarded-up units.--The information on the H-7 forms for boarded-up units was inspected. If the entries indicated that the units were lost to the inventory, the category "boarded up" was changed to the final component shown. If there were no entries on the H-7 form indicating that the unit was lost, an H-1 form was completed for it and the unit was classified as "same." In some cases an inventory-change record for the unit was created directly by computer. (See p. 25.)

Preparation for Microfilming or Storage

Following clerical review and transcription, all contents of the folders and envelopes were disassembled, and the various forms were reassembled into suitable groups for microfilming or storage for future reference. The enumeration and transcription forms were sorted by procedure and form type, in consecutive order by work-unit and basic control number. For the 15 SMSA's, each type of form was arranged in consecutive ascending order by control number, each group containing about 250 forms. Forms for the balance of the United States were arranged in the same manner, except that the forms for several States were grouped together.

For microfilming purposes, each group of forms was identified by a breaker sheet identifying the source (SMSA code 01-15, or balance of U.S., code 16), PSU number (for the 15 SMSA's only), control number ranges (e.g., 1-250), type of form, and type of procedure.

Microfilming

CINCH forms were microfilmed manually in Jeffersonville because compatible automatic equipment was not available at the time. The microfilm was processed at Bureau headquarters in Suitland. After microfilming, the forms were stored in Jeffersonville and used for reference in clerically correcting computer records which were rejected for various reasons. This clerical correction operation is described on page 25, as part of the computer processing.

Evaluation

The main difficulty in the clerical operations--both pre- and postenumeration--was logistic. For example, personnel processing the 1960 sample for enumeration were located some distance from the personnel selecting the sample. Because the same reference materials were being used and were not centrally located, the resolution and clarification of even minor problems were complex and time-consuming, frequently requiring additional clerical controls. This was especially true for the 1970 sample: Similar materials required from the 1970 census, such as address registers, questionnaires, and maps for particular ED's, had to be located and examined at separate times instead of only once because of higher priorities assigned to the 1970 census processing operation.

Because of the uneven workload, the expansion and contraction of the CINCH clerical staff created problems of space. The CINCH central processing staff was moved several times from one building to another, and only strict controls prevented the loss of materials.

Other than the normal reassignments, no adjustments in the staff were required because of substandard work. The procedures appeared to be well written and the training satisfactory. Deadlines were met, except for the processing of the 1970 sample which was delayed because of programming and computer problems. An important factor in the success of the clerical operation was the maintenance of an experienced supervisory and clerical staff throughout the operation.

COMPUTER PROCESSING

Creation of Preliminary Working Tapes

In order to facilitate computer processing of CINCH materials, data from many sources had to be combined on a single file or tape. Several preliminary working tapes were developed for both the 1960 and 1970 sample frames, and each tape was subject to its own unique processing phases. This work on the postenumeration phase of computer processing at Bureau headquarters was begun as early as October 1970 and was required for the following four basic computer operations: (1) Computer check-in of CINCH forms, (2) editing, (3) weighting and estimation, and (4) tabulation. Two of the more important tapes are described below:

1960 characteristics working tape.--This tape was created by merging selected data from the 1960 census master characteristics tape created in the sample selection, the sample source tape, and the 1970 census geographic reference tape. In general, 29 housing and 11 population items, as well as major 1960 geographic identification items, were retained from the 1960 master characteristics tape for all 1960 sample units. The 1960 nonsample units used only in the 1960 sample-unit identification operation were deleted. At the same time, certain 1960 data (persons per room, value-income ratio, gross rent-income ratio, etc.) were computed and recoded to facilitate tabulation. Although these items were computed and recorded for 1960 census, the results of the computations had not been maintained on the 1960 25-percent sample tape.

Twelve items were transferred from the sample source tape. These items, such as stratum and substratum codes and control numbers, were required in the weighting and the computation of variances.

Seventeen items of 1970 geographic information (1970 SMSA codes, central-city designations, urban codes, etc.) were transferred from the 1970 geographic reference tape. This information also was required in weighting and tabulation.

1970 sample base tape.--The 1970 sampling frame included addresses of 1970 units selected from the tape address registers for city-delivery area and from the prelisting and conventional enumeration records used elsewhere in the 1970 decennial census. Within the above sampling areas, the addresses and the basic identification items were verified to update, correct, or supplement the 1970 sample. The corrections and deletions were entered on worksheets. Cards were punched for the added, corrected, or deleted 1970 sample addresses and were converted to computer tape. After reformatting and sorting, the records were merged with the other records on the 1970 sample base tape.

The tapes for the three sampling areas within the CINCH 1970 sampling frame first were sorted, unduplicated, and corrected. The corrected tapes then were merged by primary sampling unit and control numbers. Sample records were checked for erroneous or duplicate control numbers. Six separate programs were required to consolidate and create the 1970 sample base tape.

The final step in preparing the 1970 base tape was to collate it with the 1970 geographic reference tape. Essentially, the same 1970 geographic information was transferred to the 1970 base tape as had been to the 1960 characteristics working tape.

The final phase in the preliminary computer work was to merge the 1960 characteristics working tape with the 1970 sample base tape into a master check-in tape which was the basis for the complex computer check-in operation of all CINCH forms after FOSDIC conversion.

FOSDIC Conversion

At Bureau headquarters the microfilm reels from Jeffersonville were checked for density and run through the FOSDIC computer program, which "read" the markings on the film with a beam of light and electronically converted the data to impulses on a computer tape. (For description of the FOSDIC process, see chapter 8.) All data areas were read for calibration and index failures, and these were noted on the FOSDIC log. If necessary, the reels were rerun or work units were remicrofilmed. Each resultant record contained sort keys as well as breaker-sheet and frame-sequence numbers. Forms H-1 and H-2 required one record for each side of the form; the transcription forms, although coded and microfilmed on only one side, generated three records. Wherever possible, computer codes for the CINCH items corresponded to those for the 1970 census. Sort keys and other basic identification data were standardized and placed in the front of each record.

Computer Check-In of Records

After the FOSDIC conversion of the CINCH forms was accomplished, the next major operation was to collate the resultant computerized records with the master check-in tape. This operation, in general, accomplished three major objectives: (1) Ensuring that all required forms had been properly processed and converted to computer records, (2) editing critical items on the records so that the forms could be corrected manually if necessary, and (3) transferring all of the information required for weighting and tabulation from the master check-in tape to the individual computer records. Basically, three computer programs were required for this operation, and each is described briefly below.

Read-routine program.--This program was used to receive CINCH records after FOSDIC conversion and prepare them for actual check-in. Checksums were used to check the accuracy of the FOSDIC conversion. Records were checked for page sequence and correct identification data. Tallies were provided at each major control step, and error flags were inserted into special fields on the records.

The individual parts of each record then were assembled into a standardized format. At this stage various control and component edits were performed; these edits indicated internal inconsistencies within the individual records which could not be corrected in later computer programs. Error flags were inserted in these records, which were displayed on printouts for manual correction by clerks in Jeffersonville.

Check-in program.--The basic tasks performed with this program were to compare the incoming CINCH records with the master check-in tape in order to transfer selected data to the individual records from the master tape and to flag inconsistencies between the CINCH records and the master tape. The records for the H-1 forms were first matched with the master tape on certain identification items, such as PSU number, control numbers, etc. For those H-1 records which matched, selected data for the weighting and tabulation operation were transferred from the master tape. When the H-1 records did not match, error flags were entered, and these records were later displayed on a printout. Conversely, when the master tape indicated that a H-1 record was required, but the record was not on the tape, selected identification information from the master tape also was displayed on a printout.

Special indicators on the H-1 forms had been entered during clerical review to designate whether a H-2 characteristics form and a transcription form were required for the sample unit. The H-2 and transcription records were matched with the H-1 records by primary sampling unit and control numbers first, then on the special indicators. When discrepancies occurred, error flags were entered on the individual records, and the records were displayed on a printout.

Display program.--This program was used to format selected data onto computer printouts for individual records which had been rejected, because they did not match the master check-in tape or which had error flags inserted due to internal discrepancies in the components. There were 15 reasons for rejection and 57 reasons for the insertion of error flags for the components. These records were sorted and displayed by three categories of priority for manual correction: High (33), medium (13), and low (8). Each cause for rejection and each error flag was identified by an alphabetical code to facilitate the manual corrections in Jeffersonville.

Several types of printouts resulted from the use of this program:

Rejected records.--Records with faulty identification, H-1 records not matching the master tape, records with parts missing, etc.

Flagged records.--Records with errors in the components that did not completely negate their usefulness.

Forms not expected.--Characteristics and transcription records appeared for a H-1 record which, according to the special indicators, did not require them.

Records not received.--Identification data from the master check-in tape for sample units for which H-1 records should have been received but which were not on the tape.

Clerical Correction

The computer printouts described above were transmitted to Jeffersonville for correction. This final clerical operation began during the first week in August 1972 and required eight clerks and two supervisors for a period of about 2 months. About 30,000 records were examined and corrected during this period. Training for correcting the rejected and flagged records was conducted for one-half day by subject-matter technicians.

In general, the clerks reviewed the computer printouts and determined the reasons for the rejection or flagging of records. The forms corresponding to the computer records were obtained from storage and examined. When the causes of the discrepancies were determined, the errors were corrected on the original forms if feasible. In some cases, all information had to be transcribed to new forms. The major reasons for rejection were (1) transcription errors in the identification items, (2) mechanical failure in the FOSDIC operation, and (3) errors in coding the special indicators on the H-1 forms designating that further forms were required for the individual sample units. The bulk of the errors resulting from the components edits were caused by inconsistencies between the component and entries for year built and number of units in structure; e.g., only one 1970 unit was entered on the H-1 form, and its component was marked "conversion."

After the errors had been clerically corrected, the forms were remicrofilmed and recycled through the FOSDIC and computer check-in programs. Three recycles were required in order to eliminate most of the errors. After the third recycle, the few remaining records with errors were either deleted or corrected internally by the computer.

Boarded-Up Units

The computer created H-1 records for certain boarded-up units (see p. 23) for which there was no indication of loss. All such units were classified as "same." If the unit also required a H-2 characteristics record, one was created on the computer. All 1970 computer records of the characteristics of boarded-up units classified as "same" were made "year round, other vacant" in vacancy status and "2 years or more" in months vacant. Basic housing characteristics, such as year built, units in structure, bedrooms, bathrooms, and plumbing facilities, were imputed from the 1960 census sample unit record. Since responses for the structural condition of the unit were lacking in most cases, the condition of the unit was allocated by the computer. If the entry on condition in the 1960 census record was "deteriorating" or "dilapidated," this entry was entered in the computer-created 1970 characteristics record. If the entry on the 1960 census record was "sound," the condition item of the 1970 characteristics record was left blank and was later imputed in accordance with the specifications for other 1970 units for which condition was blank.

Regardless of whether a boarded-up unit was classified as a "loss" or "same," a "boarded-up" indicator was placed in the record. Punchcards were used to indicate the original boarded-up status along with the present status. These punchcards later were collated with the basic records in the computer.

Although the boarded-up indicator provided the capability to produce counts and characteristics summary data for all units classified as "boarded up" by CINCH enumerators, many of the units originally classified as "condemned," "unfit," or "scheduled to be demolished" may also have been boarded up, thereby resulting in a significant understatement of boarded-up units.

Computer Edits

Following clerical correction and recycling, the CINCH records were subjected to further editing on the computer. Computer editing for H-1 and transcription records was done in two parts. The first part provided for computer correction of basic procedural errors and blanks. The purpose of this edit was to ensure that all necessary items were filled and were correct for certain components according to each enumeration procedure. For example, if a component was other than new construction, the year built had to be 1960 or earlier. The second part was the basic edit, which checked the validity of the components on the H-1 records and provided consistency checks between the H-1 and the transcription records.

The computer edits of the 1970 items on the H-2 characteristics records also were divided into two parts, one for the components and other items transcribed from the H-1 inventory changes forms and the other for the characteristics. The preliminary edit of the H-2 records was performed by comparing entries transcribed from the H-1 forms with the final entries in sections D and X of the H-1 records.

The second part of the H-2 edits consisted of allocating blank items (NA's). In general, the method of allocation was to use entries from the preceding unit with similar characteristics of tenure, color and sex of household head, number of units in structure for occupied units, and vacancy status by number of units in structure for vacant units. Blanks for a few items were edited by using information from other characteristics on the record itself, not by using the data from the preceding unit.

These computer edits were performed internally on the computer. No records were rejected for clerical correction. Allocation flags were inserted for each item that was changed or edited, and a count of the number of changes for each item was provided.

Weighting and Ratio Estimating

The records on the final edited CINCH computer tapes contained the weights which were necessary to produce all the final tabulations except one. The weight not on each record at the time was the appropriate ratio-estimate factor. Preliminary tabulations were produced for a few selected characteristics which were required to calculate the ratio-estimate factors. These tabulations also afforded an opportunity to examine the preliminary weighted data for consistency, among other things, and to determine if the weighting program was operating properly. A more detailed description of all factors used in the weighting operation is given below.

Estimates for the United States, the four regions, and each of the 15 selected SMSA's in the CINCH survey were obtained by using ratio estimators. In general, these estimators produced more reliable results than would be obtained by inflating the data for the sample units by the reciprocal of their probability of selection (i.e., using a simple inflation estimate). A ratio estimator will produce improved reliability when there is a sufficiently high positive correlation between the characteristic being estimated and a statistic which can be estimated from the sample survey and for which figures are available from an independent source (such as the census). Ratio estimates for this survey were produced by multiplying the simple inflation estimates by the ratio of the census total of the correlated statistic to an estimate of this statistic obtained from the sample.

Estimates of components applicable to units existing in 1960--same, conversion, merger, demolition and other loss--were obtained by a ratio estimator employing the 1960 census count of total housing units. The ratio-estimate factor was applied to both the 1960 and 1970 estimate of units reported as "same," or changed by conversion and merger and to the 1960 estimates of units reported as lost through demolition or other means.

Characteristics of units existing in 1960 were tabulated for a subset of the housing units for which components were reported. Estimates of each component's characteristics were improved by using a ratio estimator employing the estimated count of the component from the total sample of housing units.

The ratio estimation procedure for components and characteristics of units in existence in 1960 was performed independently within each of the following areas:

1. For each of the 15 selected SMSA's:

   a. Estimates for each of these SMSA's by the principal city defined as of 1960 and by the remainder of the SMSA defined as of 1970; and,

   b. For the contribution of these SMSA's to the U.S. and regional estimates by the central city (as contrasted with the principal city) defined as of 1960 and the remainder of the SMSA defined as of 1960 (except for the Los Angeles-Long Beach and San Francisco-Oakland SMSA's, where the 1970 definition of the remainder of the SMSA was used).

2. For regions outside the 1960 definition of the 15 selected SMSA's: By region, by inside the 1960 definition of SMSA's (by central city and balance of SMSA) and outside SMSA's (by urban or rural residence as of 1960). The number of in-SMSA factors was expanded by the use of four 1960 population-size classes: 1 million or more; 500,000 or 999,999; 250,000 to 499,999; and less than 250,000.

SMSA's for which the central city and principal city ratio-estimate areas differ included Los Angeles-Long Beach and San Francisco-Oakland. For these SMSA's, Long Beach and Oakland were included in the central-city definition and excluded from the principal-city definition. The St. Louis, Cleveland, Houston, and Washington, D.C., SMSA's had counties which had been added to these SMSA's definitions since the 1960 census. These added counties were included in the balance-of-SMSA ratio-estimate area for the individual SMSA estimates and excluded from the balance-of-SMSA ratio-estimate area for the United States and its regions.

Estimates of the count and characteristics of new-construction units were obtained by applying a ratio estimate to the 1970 census count of units built after 1960. The ratio estimation procedure was performed independently within areas similar to those defined above, except that within the 15 selected SMSA's the 1970 census definitions of the principal city and the central city were used, and outside these SMSA's the 1970 census definitions of all ratio-estimate areas were used.

For units added to the inventory through other sources, the final estimates were obtained by inflating the sample data by the reciprocal of the probability of selection of these units.

Tabulation

After the final weights and ratio estimators were applied, the 1960 and 1970 characteristics data were reformatted in one long computer record in preparation for tabulation.

All of the tallies for the CINCH survey were obtained by processing a weighted-characteristics detail file through a generalized tally table system (GENER8). Information concerning each tabulation variable was punched and maintained on control tapes. The detail file then was recoded according to the tabulation variables specified on the control tapes for use in the tally portion of the GENER8 system. The GENER8 system was modified in the tally section so that it would produce a binary matrix for subsequent processing as well as create a working display.

All of the characteristics data (except for the new-construction component) for each of the 15 SMSA's were tallied using the GENER8 system, and a matrix was formed for each characteristic. The cities of Long Beach, Oakland, and Everett were tallied as "outside the central city" for the Los Angeles-Long Beach, San Francisco-Oakland, and Seattle-Everett SMSA's, respectively. Most of the 1970 new-construction tallies for units built in the period 1960-70 were stripped from the 1970 census sixth-count summary file by use of the EXEC 8 system (see chapter 8) and were added to the matrices. (New-construction tallies for plumbing facilities, structural condition, year moved in, and characteristics of recent-mover households moving into units built in 1960-70 were based on data from the CINCH sample.) At this time, all the medians were calculated and placed in the matrices. The matrices for each SMSA were matched to preprinted table displays by the use of two "imager" programs, and the data then were converted to publication format on the high-speed printer.

To obtain tallies for the United States and four regions, a matrix was formed for each region by tallying a balance-of-the-United States file (excluding the 15 SMSA's), using the GENER8 system. Each of these region matrices was summed together with the matrices for the 15 SMSA's located within that region. In the West region, the three SMSA's were tallied a second time to place the cities of Long Beach, Oakland, and Everett in the "inside central city" category for summing into the West region matrix. In the North Central and South regions, four of the SMSA's--Cleveland, Houston, St. Louis, and Washington--were tallied a second time to exclude from the region tabulations those counties not in the 357 primary sampling units. These four new SMSA matrices were used in summing to the region level. The new-construction tallies for most of the characteristics at the region level were stripped from the 1970 census sixth-count file (using EXEC 8) and were added to these summed region matrices; the regional tallies for the remaining new-construction items came from the CINCH sample. All medians were calculated and placed in the matrix. The final region matrices were summed to obtain a matrix for the United States total. The matrices for the regions and the United States were matched to table displays, and the data were converted to publication format through the use of two imager programs.

Problems

Computer problems began with selection of the sample from the 1960 census 25-percent sample tapes. Parts of the tapes had deteriorated past the point of re-creation, and special programs had to be designed for selecting the 1960 sample. The problem became even more pronounced later in the survey, when detailed characteristics data were needed for the CINCH sample units. For example, one series of programs had to be used to run two identical copies of the 1960 tape, skipping from one tape to the other when a bad block of data was encountered. The content of the data on the 1960 sample tapes was sometimes defective; e.g., breaker sheets with the 1960 identification information for split ED's often were missing and sometimes had been inserted for ED's which had not been split.

The CINCH 1970 sample, selected from a myriad of computerized and clerical sources, presented difficulties in standardizing records so that they could be converted for further computer processing. In an effort to save time and money, several concurrent survey samples (for the Census Employment Survey, the Residential Finance Survey, etc.) were selected by computer simultaneously with the CINCH 1970 sample; complex selection programs were required for the varying sample sizes, sample groupings, and "take-every" patterns in each survey.

The standardized record size of the FOSDIC conversion program was belatedly found to be inadequate for incoming CINCH records. Individual CINCH forms had to be split into two or three parts for microfilming, creating additional part-sequence, identification, and sorting problems, compounded by the necessity of having continuation forms for some sample units.

Until the time of computer check-in and tabulation, low priorities had to be assigned to CINCH processing because of the decennial census workload. Even at the later stages of CINCH processing, computer testing time--when available--was often fragmented, and production running time often was not available for long programs. CINCH tapes frequently were lost in the interim or could no longer be read, so that programs had to be rerun or source tapes recreated.

PUBLICATION

Table and Text Preparation

Early in the planning stage for the publications, it was decided to utilize the Bureau's high-speed (computer) printer facilities as much as possible in preparing the tables to expedite publication release. This decision was predicated on the fact that all tables and most of the text were standardized for each report, and typing during copy preparation would be reduced

accordingly. Preprinted tabular outlines were prepared before the data were produced. Maps and charts also were prepared in advance, although data plotting was required on the charts after receipt of the data. Large sections of the text also were reproduced at an early stage, including the introduction and the appendixes for the area classification and the definitions and explanations of the individual items. Although the sections of the text containing the highlights and the appendix on the accuracy of the data were standardized as much as possible, data for these portions had to be typed for each individual report.

Three copies of the data in tabular form--the original (or camera copy) and two carbons--were produced by the computer line printer. Before the original copy was released for mounting, each set of tabulations was reviewed thoroughly by subject-matter specialists. This review included checking the data for internal consistency and overall reasonableness, suppressing medians and data to prevent identification of an individual unit, and inserting certain symbols to make the data more meaningful for users. Clerks at Bureau headquarters verified the accuracy of the data by adding columnar and linear data to subtotals and grand totals. When errors were found, the tabular data were rerun or corrections were noted so that they could be made in copy preparation. In addition, because of sample-size differences, the computer-generated tabulations for three 1960 items (bathrooms, bedrooms, and units in structure) had to be ratio-estimated clerically and the revised data typed for the final publication tables.

After the data had been reviewed, the original copy was released for copy preparation, together with worksheets containing the data necessary for the final preparation of the charts, highlights, and the appendix on the accuracy of the data. The tabular data were mounted on the preprinted outline pages, and the components of each report were assembled. Subject-matter specialists reviewed the final report pages to assure that the correct tables had been mounted, all corrections made, and the materials arranged in proper sequence.

Printing and Publication

After final review, the reports were transmitted to the printer for reproduction by photo-offset and for binding. There were 16 separate reports for the 1970 Census of Housing, Components of Inventory Change, Series HC(4). The report for the United States and regions was designated at HC(4)-1, while the numbering of the SMSA reports started with HC(4)-2 for Atlanta, Ga., and continued through HC(4)-16 for Washington, D.C.-Md.-Va.

The first report, published in May 1973, was for the New York SMSA, and the last report, published in mid-August 1973, was for the United States and regions. In addition to the detailed reports, a series of press releases was issued--the first in July 1973 for the New York SMSA and the last in August for the United States.

RELIABILITY OF THE ESTIMATES

Sampling Variability

The particular sample used for the CINCH survey was only one of a large number of possible samples of the same size that could have been selected using the same sample design, sample-selection procedures, data-collection forms, measurement procedures, and interviewers. Estimates derived from different samples would differ from each other. The standard error of a survey estimate is a measure of the variation among the estimates from all possible samples and is, therefore, a measure of the precision with which an estimate from a particular sample approximates the average result of all possible samples. The estimate and its associated standard error may be used to construct a confidence interval; that is, an interval with prescribed probability that it would include the average result of all possible samples. Thus, the chances are about two out of three that the survey estimate would differ from the average result of all possible samples by less than one standard error (plus or minus). Similarly, the chances are about 19 out of 20 that the difference would be less than twice the standard error and 99 out of 100 chances that it would be less than 2 1/2 times the standard error.

In addition to sampling error, the survey estimates were subject to nonsampling errors. These errors can be attributed to many sources: substitutions for missing data, incorrect or incomplete reporting by the interviewer or the respondent, and mistakes in transcribing, coding, and processing the data. Such errors also occur in complete censuses. Quality control and edit procedures were utilized at various steps of the CINCH survey operation to keep such errors at an acceptably low level. It is unlikely, however, that these controls eliminated all errors.

The accuracy of a survey estimate is determined by the joint effect of sampling and nonsampling errors. As calculated for the CINCH reports, the standard error partially measures the effect of random response and interviewer errors, but it does not reflect any bias caused by systematic errors in the data.

Computation of Sampling Errors

A number of approximations were required to derive standard errors applicable to the wide variety of estimates presented in the CINCH statistics. As a result, the standard error tables contained in the published reports provide an indication of the order of magnitude of the standard errors rather than the precise standard error for a specific estimate. It was necessary to produce special tabulations in order to derive estimates of the standard errors for this survey. The production of these tabulations was costly and, as a result, it was not feasible to calculate the standard error for each of the published figures. Therefore, a set of characteristics of varied magnitude was chosen to represent the different variance behavior patterns expected from the sample design. The selected items included each of the components of the 1960 and 1970

housing inventories as well as selected characteristics of the units classified into each component category.

In order to calculate the standard error of an estimate for the principal city and balance of each of the 15 selected SMSA's, each segment was assigned to one of 50 systematic subsamples of the original sample. These systematic subsamples were designated in a manner which duplicated the original selection procedures. The squared difference between the 50 subsample totals of a linearized form of the ratio estimator used in each SMSA and the average for all subsamples was used to obtain the estimates of the standard errors of the selected characteristics. This variance estimation method produced standard errors that reflect, for the most part, the level of variability associated with estimates incorporating all stages of estimation.

Standard errors for the United States and regional estimates were obtained by combining the variance estimates produced for each of the SMSA's and the variance estimates obtained from the sample selected within the PSU's outside of the 15 SMSA's. The standard error of an estimate from these PSU's reflects a contribution from the PSU's in strata containing only one PSU (i.e., self-representing) and a contribution from PSU's selected in strata containing more than one PSU (i.e., nonself-representing). Estimates from these two classes of PSU's exhibit different variance behavior patterns, and different methods of estimation were required for each class. For the PSU's designated as self-representing, the estimates of standard errors were obtained in a manner identical to that used in the 15 SMSA's. The method for estimating the contribution of nonself-representing PSU's to the standard error involved combining strata and using the squared difference between the individual stratum totals of a linearized form of the ratio estimator and the weighted average of this total for the combined strata. Again, these variance estimation methods produced standard errors that reflect, for the most part, the level of variability associated with estimates incorporating all stages of estimation.

The computed standard errors were sample estimates and, therefore, have sampling errors which are sometimes relatively large. As a final step, the standard error estimates were refined by applying a regression technique designed to reduce this variability. This same technique also produced a functional relationship between the levels of the characteristics and the computed standard errors which was used to produce a general set of standard errors applicable to all of the published figures.

SURVEY ITEMS

The items on the three basic data-collection forms for 1970 were similar to the ones used in the two previous CINCH surveys, except that several characteristics were added to form 70H-2 (characteristics) in order to make the data more meaningful. Table 5 summarizes the items on each data-collection form.

The individual items are reproduced and described below, together with the general action prescribed for the enumerator in each case. The three forms are reproduced in full in a separate publication, U.S. Bureau of the Census, 1970 Census of Population and Housing, Surveys of Components of Inventory Change and Residential Finance: Principal Data-Collection Forms and Procedures, Series PHC(R)-4.

Form 70H-1, Inventory Change

The H-1 form was a combination of the conventional type, on which the enumerator recorded information by marking a precoded box or writing in the entries, and the FOSDIC type, on which the enumerator recorded information by marking the appropriate circles. It was divided into an identification section, five interviewer sections (A through E), and one section for office use (section X). Before the interview began, the enumerator filled the identification items. The manner of completing the H-1 form varied according to the enumeration procedure. (See the section on enumeration, p. 15 ff.)

a. Sheet_____ of_____ sheets	b. PSU No.
c. ED No.	d. Control No.
e. City, town, borough	
f. State	
g. Interviewed by	Date
h. Reinterviewed by	Date

A. Precanvass (for procedure B only)

The interviewer used this section to determine which units to enumerate in a multiunit building. He made a precanvass of the building containing the sample unit; when there were nine or more housing units in the building, he selected a subsample according to specific instructions and completed section D of the H-1 form for only the subsampled units.

(a) **Total number of units in the building** *(If a building has 1 or more addresses, count all the units in that building.)*

☐ 8 OR LESS *(Continue with section B and interview all units in this building.)*

☐ 9 OR MORE *(Go to (b).)*

(b) **Total number of units on the same floor as the sample unit**

☐ 8 OR LESS *(Continue with section B and interview all units on the same floor as the sample unit(s).)*

☐ 9 OR MORE *(Draw diagram in section E. Refer to manual for instructions.)*

Table 5. **Items of Data Collected for Tabulation in the 1970 CINCH Survey**

Item	Form H-1[1]	Form H-2[1]	Form H-3[1]
COMPONENTS			
Same	X		
Conversions	X		
Mergers	X		
Other additions	X		
From group quarters	X		
From nonresidential use	X		
Moved to site	X		
New construction	X		
Losses			
To group quarters	X		X
To nonresidential use	X		X
Demolitions	X		X
Moved from site	X		X
Unfit	X		X
Condemned	X		X
Other (to be demolished, fire, flood, wind, hail, miscellaneous)	X		X
1970 CHARACTERISTICS OF HOUSEHOLD			
Number of persons		X	
Relationship to head		X	
Age of persons		X	
Sex of head of household		X	
Color or race of head of household		X	
Income[2]		X	
Education of head of household		X	
Year head moved into unit		X	
Year other occupants moved		X	
1970 CHARACTERISTICS OF HOUSING UNIT			
Type of living quarters	X		
Number of housing units in structure	X		
Year built	X		
Number of rooms		X	
Number of bedrooms		X	
Number of bathrooms		X	
Water supply		X	
Flush toilet		X	
Bathtub or shower		X	
Heating equipment		X	
Condition of unit		X	
Vacancy status		X	
Duration of vacancy		X	
Tenure		X	
Rent		X	
Value of property		X	
Cost of utilities and fuel		X	
CHARACTERISTICS OF PREVIOUS RESIDENCE[3]			
Same or different household head		X	
Location		X	
Number of rooms		X	
Year built		X	
Tenure		X	
Value		X	
Disposition		X	
Rent		X	
Reason for moving		X	
Number of housing units		X	
Number of times moved		X	

[1]Equivalent form numbers for 1959 were H-7 and H-7a (for H-1), H-8 (for H-2), and H-14 (for H-3).
[2]Asked only of occupants 14 years of age or older.
[3]Asked only when head of household had moved into present residence in 1969 or later.

B. 1960 units and current status

This section contained space for selected data for a maximum of eight 1960 units in the sample and space for the enumerator to record the 1970 status of the 1960 unit, including the current use of the site of the 1960 structure, if it no longer existed, and public or private ownership of such sites.

Item 1. Sample key letter and FOSDIC page number.--Prior to the interview, the enumerator transcribed from the 1960 census listing book the sample key letter that identified the 1960 census unit in the CINCH sample and the page numbers on which the sample units were recorded. For living quarters that had been classified as group quarters in 1960, the enumerator entered "GQ" in the space for the sample key letter. (In the 1960 census, each housing unit was assigned a sample key letter, A, B, C, or D. Those assigned the letter "A" were thereby designated as the 25-percent sample, for which detailed 1960 characteristics were tabulated.)

Item 2. Name of head and specific address.--The enumerator transcribed the name of the household head from the 1960 census listing book to the first space in section B. If the 1960 unit was listed as vacant, the word "vacant" was entered in item 2. For group quarters, the name of the quarters was entered, e.g., "Shady Rest Nursing Home." In the space below the name of the head, the enumerator transcribed the specific address from the 1960 listing book. For multi-unit structures, he entered the apartment number or specific location.

Items 3a-4b. 1970 status.--These items contained space for the enumerator to enter the 1970 status of the 1960 units. For the 1960 units listed in section B that no longer existed in 1970, the enumerator determined what had happend to the unit (changed to nonresidential use, demolished, moved from site, unfit, condemned, boarded up, or lost for some other reason) and recorded the appropriate classification in item 3a. When the building containing the 1960 sample

SECTION B - 1960 UNITS AND CURRENT STATUS

List specific addresses of HU's from 1960 Listing Book		Current Status					
1960 Listing Book Sample Key Letter (Col. 5) FOSDIC Page No. (Col. 7) (1)	Name of Head and Specific Address (2)	TO NONRESidential DEMOLished* MOVED from site* UNFIT CONDemned BOARDED UP OTHER* (specify)		S (SAME) CONVerted MERged TO GQ (Group Quarters)		*FOR OFFICE USE ONLY* Transcribe selected information to:	
		Enter status (3a)	Enter current use of site* (3b)	Enter status (4a)	Enter 1970 Unit No. (4b)	H-100 if not "S"	H-2 if "S"
Key Letter / Page No.			○ Private ○ Public				
Key Letter / Page No.			○ Private ○ Public				
Key Letter / Page No.			○ Private ○ Public				
Key Letter / Page No.			○ Private ○ Public				
NOTE TO INTERVIEWER: Write comments in Section E on page 4.							

***If the 1960 unit no longer exists at this address, describe in item 3b the current use of the site, for example: residential building, motel, office building, store, gas station, school, hospital, park, highway, vacant lot, etc. Fill appropriate circle to indicate whether building, etc., is under PRIVATE or PUBLIC ownership (Federal, State, or local government agency).**

unit was no longer in existence (demolished, moved from site, destroyed by fire or flood, etc.) the enumerator briefly described in item 3b the current use of the site and recorded whether the 1970 use was under private or public ownership. For those 1960 units that still existed as housing units in 1970, the enumerator listed the corresponding living quarters in section D (see below) and made the 1960-to-1970 comparison. For housing units classified as "same," "changed by conversion or merger," or "changed to group quarters," that status was transcribed in item 4b. For living quarters classified as "group quarters" in 1960 and also in 1970, the enumerator filled the appropriate items in section D, made no entries in items 3a-4b, but entered "still group quarters in 1970" in the comments section.

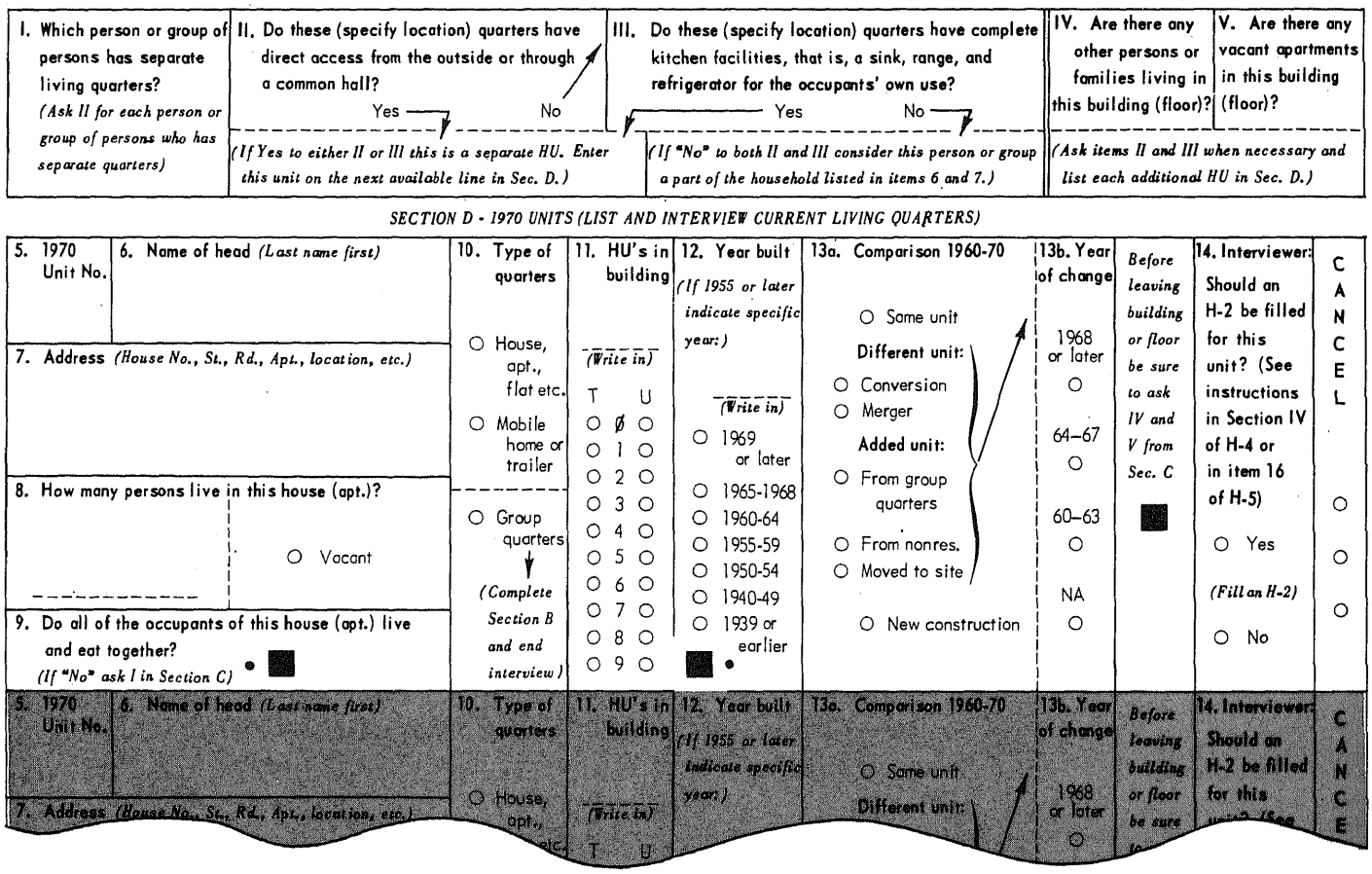
The last two columns were used in the clerical processing in Jeffersonville.

The enumerator then proceeded to complete section D (see below) for the first 1970 unit (i.e., a 1960 unit existing in 1970) in the structure. On completion of questions 5-14 in section D, he was instructed to ask the relevant questions in section C before enumerating the next unit.

C. Living quarters determination

Living quarters in the CINCH program in December 1970 were classified as either "housing units" or "group quarters." The concepts and definitions used were the same as those applied in the decennial census in April 1970. (See chapter 15.)

Questions I, II, and III.--The enumerator asked questions I, II, and III based on the respondent's reply to question 9, section D, "Do all of the occupants of this house (apartment) live and eat together?" The



answers to these questions helped the enumerator to identify each housing unit in the structure or to determine whether there were any living quarters used as group quarters. The answers to questions II and III also helped the enumerator to locate additional units in situations where the respondent might have considered the living quarters to be only one unit. If the enumerator determined the existence of a separate unit, he enumerated the additional unit on the next line in section D.

The enumerator asked questions IV and V as needed before leaving the building. The purpose was to determine if additional housing units existed in the structure or on the property. Additional housing units discovered by this procedure also were listed in section D.

D. 1970 units

Section D contained items on the 1970 characteristics and the components of change for each unit in the 1960 inventory, as determined by the 1960-to-1970 comparison.

Item 5. Unit number.--Each housing unit or group quarters listed in section D was assigned a 1970 unit number, beginning with "1" and continuing in numerical sequence. The 1970 unit number not only helped the enumerator list the units in an orderly sequence but also was used to relate the 1970 units in section C to the 1960 units in section B.

Item 6. Name of head.--The enumerator recorded the name of the head of the household. If the 1970 unit was vacant, the word "vacant" was entered. For group quarters, the name of the group quarters was given.

Item 7. Address of the unit.--The specific address of the unit was entered. In multiunit buildings, apartment numbers or the specific locations of the units in the building (e.g., "second floor, front") were recorded. In rural communities, the highway or route number, mailbox number, or specific location (such as, "third house on North State, east of the intersection of Route 238 and State Route 7") was entered. Specific addresses were used in comparing the 1970 units with the 1960 units.

Item 8. Number of persons in unit.--The total number of persons who occupied the housing unit was entered in this space. This number included persons related to the head and any lodgers, foster children, wards, and resident employees who shared the living quarters of the household head. If the unit was vacant or temporarily occupied by persons all of whom had a usual place of residence elsewhere, the enumerator filled the FOSDIC circle for "vacant."

Item 9. Coverage question.--The enumerator asked the question, "Do all of the occupants of this house (apartment) live and eat together?" at each living quarters occupied by households whose members included married

children, parent(s) of the head, relatives, or persons unrelated to the head such as lodgers, and boarders. If the answer was "no," he then asked questions I, II, and III in section C. (See above.)

Item 10. Type of quarters.--The enumerator marked each category of living quarters as to type (house, apartment, flat, etc.; mobile home or trailer; or group quarters), usually on the basis of his own observation. The concepts and definitions were the same as those used in the April 1970 census.

Item 11. Number of housing units in building.--On the line provided the enumerator entered the total number of housing units in the building and then filled the appropriate FOSDIC circles for tens and units. The concept and definition used to determine the number of units in the building were the same as those used for the April 1970 census.

Item 12. Year built.--The enumerator determined the year the building was originally constructed and marked the appropriate FOSDIC circle. If the building was built in 1955 or later, he determined the exact year of construction, entered it on the line provided, and then marked the proper FOSDIC circle. The definition of year built was the same as that used in the census.

Items 13a, Comparison, and 13b, Year of change.--The interrelationship of the items for comparison and year of change was such that both items were collected together. Item 13a provided the 1970 status compared with 1960. Item 13b was filled only for those units built in 1960 or later which were not the same in 1970 and 1960. An "NA" (not available) circle was provided for the enumerator to mark only if the enumerator could not ascertain the answer from a reliable respondent.

In subsequent processing, the entries in items 10, 11, 12, and 13a were clerically coded to page 4 of the H-2 form.

TRANSCRIBE FROM SECTION D OF H-1

10. Type of quarters	11. HU's in building
○ House, apt., flat, etc. ○ Mobile home or trailer ○ Group quarters	○ Ø ○ ○ 1 ○ ○ 2 ○ ○ 3 ○ ○ 4 ○ ○ 5 ○ ○ 6 ○ ○ 7 ○ ○ 8 ○ ○ 9 ○
12. Year built	**13a. Comparison**
○ 1969 or later ○ 1965-68 ○ 1960-64 ○ 1955-59 ○ 1950-54 ○ 1940-49 ○ 1939 or earlier	○ Same ○ Conversion ○ Merger ○ From GQ ○ From nonres. ○ Moved to site ○ New construction

Item 14. Screening question.--The purpose of this item was to make certain that the enumerator filled an H-2 characteristics form for each 1970 unit designated for the subsample. The enumerator was asked whether the 1970 unit met the specific requirements for becoming a subsample unit. If the answer was "yes," he was instructed to complete a form H-2.

X. Office coding boxes

This section contained space for clerical transcription of selected 1960 and 1970 data from sections B and D as well as from the identification section. (See p. 22 for description of this operation.) The data from section X were used in the computer processing of the 1960 and 1970 components of change. Several items also were transcribed to boxes O, P, and Q on page 4 of the H-2 form.

TRANSCRIBE FROM SECTION X OF H-1

O Number of 1960 sample units listed in section B of H-1	P Total number of 1960 units listed in section B of H-1	Q Total number of 1970 units listed in section D of H-1
Ø ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○	○ ○ Ø ○ ○ 1 ○ ○ 2 ○ ○ 3 ○ ○ 4 ○ ○ 5 ○ ○ 6 ○ ○ 7 ○ ○ 8 ○ ○ 9	○ Ø ○ ○ 1 ○ ○ 2 ○ ○ 3 ○ ○ 4 ○ ○ 5 ○ ○ 6 ○ ○ 7 ○ ○ 8 ○ ○ 9 ○

Form 70H-2, Characteristics

Form H-2 was filled for a subsample of all 1970 units listed on the H-1 schedule. Although most of the items on the H-2 form provided for FOSDIC marking, entries for a few items were recorded in a conventional manner and later coded to the FOSDIC format in the clerical operation in Jeffersonville. The 1970 data obtained on the H-1 schedule were transcribed to the back of the H-2 form as well.

Most of the 1970 items on form H-2 were identical to the 1970 census items in definition, intent, and categories. In a few instances, question wording was changed to make it appropriate in a direct-interview situation.

Identification items

The enumerator referred to the H-1 inventory changes form and the H-5 folder identification label for the housing unit for information to complete part of the identification section of form H-2 for the sample unit. The entries needed for computer processing were clerically transcribed to code boxes on page 4 of the H-2 form.

Section X - FOR OFFICE USE ONLY

A. PSU No.	B. Type of procedure	C. Control No.	D. No. of 1970 units listed in Sec. "D"	E. No. of 1960 sample units listed in Sec. "B"	F. Total No. of 1960 units listed in Sec. "B"	G.	H.	I. Within Control Sequence No.
■		■				■	■	1st SU 2nd SU 3rd SU 4th SU
○ ○ ○ Ø		○ ○ ○ Ø ○ ○	Ø ○ ○	○ ○ Ø	Ø ○ ○	○ Ø	○ ○ Ø ○ ○	○ ○ 1 ○ ○
○ ○ ○ 1		○ ○ ○ 1 ○ ○	1 ○ ○	○ ○ 1	1 ○ ○	○ 1	○ ○ 1 ○ ○	○ ○ 2 ○ ○
○ ○ ○ 2	A ○	○ ○ ○ 2 ○ ○	2 ○ ○	○ ○ 2	2 ○ ○	○ 2	○ ○ 2 ○ ○	○ ○ 3 ○ ○
○ ○ ○ 3	B ○	○ ○ ○ 3 ○ ○	3 ○ ○	○ ○ 3	3 ○ ○	○ 3	○ ○ 3 ○ ○	○ ○ 4 ○ ○
○ ○ ○ 4	C ○	○ ○ ○ 4 ○ ○	4 ○ ○	○ ○ 4	4 ○ ○	○ 4	○ ○ 4 ○ ○	
○ ○ ○ 5	D ○	○ ○ ○ 5 ○ ○	5 ○ ○	○ ○ 5	5 ○ ○	○ 5	○ ○ 5 ○ ○	
○ ○ ○ 6	○	○ ○ ○ 6 ○ ○	6 ○ ○	○ ○ 6	6 ○ ○	○ 6	○ ○ 6 ○ ○	
○ ○ ○ 7		○ ○ ○ 7 ○ ○	7 ○ ○	○ ○ 7	7 ○ ○	○ 7	○ ○ 7 ○ ○	
○ ○ ○ 8		○ ○ ○ 8 ○ ○	8 ○ ○	○ ○ 8	8 ○ ○	○ 8	○ ○ 8 ○ ○	
○ ○ ○ 9		○ ○ ○ 9 ○ ○	9 ○ ○	○ ○ 9	9 ○ ○	○ 9	○ ○ 9 ○ ○	

Office coding boxes, H-2 form

FOR OFFICE USE ONLY

TRANSCRIBE FROM PAGE 1 OF H-2

A PSU No.	B Type of procedure	C Control No.	D Within Control Sequence No.	E Source	F Within ED Sequence No. or FOSDIC Page No.	G Sample Key Letter
----------	----------	----------	----------	FOSDIC Page No.	----------	---------
			1st Su 2nd Su 3rd Su 4th Su	○		
Ø ○ ○ ○		○ ○ Ø ○ ○ ○			Ø ○ ○ ○	
1 ○ ○ ○	○ A	○ ○ 1 ○ ○ ○	○ ○ 1 ○ ○		1 ○ ○ ○	○ A
2 ○ ○ ○		○ ○ 2 ○ ○ ○	○ ○ 2 ○ ○	ED Sequence No.	2 ○ ○ ○	
3 ○ ○ ○	○ B	○ ○ 3 ○ ○ ○	○ ○ 3 ○ ○	○	3 ○ ○ ○	○ B
4 ○ ○ ○		○ ○ 4 ○ ○ ○	○ ○ 4 ○ ○		4 ○ ○ ○	
■	○ C	•	■		■ •	■ ○ C
5 ○ ○ ○		○ ○ 5 ○ ○ ○		None Used	5 ○ ○ ○	
6 ○ ○ ○	○ D	○ ○ 6 ○ ○ ○		○	6 ○ ○ ○	○ D
7 ○ ○ ○		○ ○ 7 ○ ○ ○			7 ○ ○ ○	
8 ○ ○ ○	○	○ ○ 8 ○ ○ ○			8 ○ ○ ○	○ GQ
9 ○ ○ ○		○ ○ 9 ○ ○ ○			9 ○ ○ ○	

TRANSCRIBE FROM PAGE 1 OF H-2

H Age of head	I Age of wife	J Number of own children	K Number of other relatives	L Number of nonrelatives	M Number of roomers, boarders, and lodgers	N Total family income (and primary individuals)
		Under 6 6–17	Under 65 65+	Under 65 65+		■
○ Ø ○	○ Ø ○	○ Ø ○	○ Ø ○	○ Ø ○	Ø ○	39.------ ○ ○ Ø ○ ○ ○
○ 1 ○	○ 1 ○	○ 1 ○	○ 1 ○	○ 1 ○	1 ○	○ ○ 1 ○ ○ ○
○ 2 ○	○ 2 ○	○ 2 ○	○ 2 ○	○ 2 ○	2 ○	40.------ ○ ○ 2 ○ ○ ○
○ 3 ○	○ 3 ○	○ 3 ○	○ 3 ○	○ 3 ○	3 ○	○ ○ 3 ○ ○ ○
○ 4 ○	○ 4 ○	○ 4 ○	○ 4 ○	○ 4 ○	4 ○	41.------ ○ ○ 4 ○ ○ ○
■		■		■		
○ 5 ○	○ 5 ○	○ 5 ○	○ 5 ○	○ 5 ○	5 ○	○ ○ 5 ○ ○ ○
○ 6 ○	○ 6 ○	○ 6 ○	○ 6 ○	○ 6 ○	6 ○	$ ------- ○ ○ 6 ○ ○ ○
○ 7 ○	○ 7 ○	○ 7 ○	○ 7 ○	○ 7 ○	7 ○	○ ○ 7 ○ ○ ○
○ 8 ○	○ 8 ○	○ 8 ○	○ 8 ○	○ 8 ○	8 ○	*(Write total amount in dollars and code)* ○ ○ 8 ○ ○ ○
○ 9 ○	○ 9 ○	○ 9 ○	○ 9 ○	○ 9 ○	9 ○	○ ○ 9 ○ ○ ○

Transcription boxes, page 4, H-2 form

IDENTIFICATION ITEMS

a. PSU No. (from H-1)	b. ED No. (from H-1)	c. Control No. (from H-1)	d. 1970 Unit No. (from H-1)	e. Sample Key Letter (from H-1)	f. FOSDIC page No. (from H-1)	g. Type procedure (from H-5)

h. Location (Number, street, box, RFD)	i. City, town, borough, village, unincorporated place	j. County	k. State

l. Name of respondent (or line No.)	m. Telephone No.	n. Interviewed by	Date	o. Reinterviewed by	Date

1. What is the name of the head of this household? What are the names of all other persons who live here? *(Enter last name first)* *LIST NAMES IN THIS ORDER*: Head of the household; Wife of head; Unmarried children, oldest first; Married children and their families; Other relatives of the head; Persons not related to the head *For vacant units write VACANT in line 1*	2. How is each person related to the head of this household? For example: Head, Wife, Son or daughter, Grandfather, Uncle, Mother-in-law, Lodger, Lodger's wife, Maid, etc.	3. Sex Male (M) Female (F)	4. How old was he on his last birthday?	*INTERVIEWER: ASK THESE ITEMS AT END OF INTERVIEW.* *Ask for persons 14 years and older, related to the head.* 38. During calendar year 1970, how many weeks did he (or will he) work?	39. During calendar year 1970, how much did he (or will he) earn in wages, salary, commissions, assistantships, fellowships, bonuses or tips from all jobs? *(Amount earned before deductions for taxes, bonds, dues, or other items)*	40. During calendar year 1970, how much money did he (or will he) earn working in his own business, professional practice, or farm? *(Net after business operating expenses. If business or farm lost money, write "LOSS" above amount)*	41. During calendar year 1970, how much money did he (or will he) receive from other income such as interest, dividends, rents, Social Security, pensions, unemployment compensation, veterans' allowances, public assistance, welfare payments, or other regular payments?
1 *For vacant units complete item 5d, and all items with underlined numbers.*		○ M ○ F			○ None $ _____	○ None $ _____	○ None $ _____
2		○ M ○ F			○ None $ _____	○ None $ _____	○ None $ _____
		○ F			$ _____	$ _____	$ _____
10		○ M ○ F			○ None $ _____	○ None $ _____	○ None $ _____
					○ None (Col. 39) $ _____	○ None (Col. 40) $ _____	○ None (Col. 41) $ _____

5a. Is there anyone else who usually lives here but is temporarily away? *(Add names above, if necessary)*

5b. Is there anyone staying here who has no usual place of residence elsewhere? *(Add names above, if necessary)*

5c. I have listed (——) persons who live here. Is this correct? *(Add names above, if necessary)*

5d. Final count
(Mark total number of persons from item 1)

1 ○ 2 ○ 3 ○ 4 ○ 5 ○ Vacant ○

6 ○ 7 ○ 8 ○ 9 ○ 10 or more ○ ■

6. Color or race of head

○ White

○ Negro or black

○ Other

If continuing on another schedule, fill these circles. ■ ○ ○ ○

INTERVIEWER: Continue with item 7 on page 2 ➔

Items 1-4.--The conventional design of these items provided 10 lines for the enumerator to write in the name of each household member, relationship to the household head, sex, and age. These data were clerically coded in boxes H-M on page 4 of the H-2 form to obtain the following characteristics: Household composition by sex and age of head; presence of nonrelatives; presence of roomers, boarders, and lodgers; own children by age group; and persons 65 years old and over.

Items 5a, b, and c.--These questions were designed to improve coverage, to ensure that all persons were included in the correct households, and to make certain that households were demarcated properly.

Item 5d.--After the enumerator had filled items 1-5c, he marked the appropriate circle for the final count of persons.

Item 6.--The enumerator was instructed to determine the color or race of the household head by observation and to mark the appropriate FOSDIC circle for one of three categories--white, Negro or black, or other. The last category included Chinese, Japanese, American Indian, and any other race except white or Negro.

In the 1960 and 1970 censuses, the data on race represented essentially self-classification by the respondents; otherwise, the concepts and definitions of households and persons on the CINCH H-2 form were the same as those for similar items on the H-1 form and in the 1970 census.

Items 7-22.--With the exception of item 14, condition, items 7 through 22, listed below, were identical to those used in the 1970 census (for definitions, see chapter 15):

Item No. on CINCH form 70H-2	Description	Item No. on 1970 census questionnaire
7	Rooms	H4
8	Bedrooms	H26
9	Water supply	H5
10	Toilet	H6
11	Bathtub or shower	H7
12	Complete bathrooms	H21
13	Heating equipment	H14
15	Description of building	H10a
16	Acreage	H10b
17	Vacancy status	C
18	Months vacant	D
19	Tenure	H9
20	Value	H11
21	Contract rent	H12
22a-d	Cost of utilities	H13a-d

Item 14. Condition.--The enumerator classified each housing unit in one of two categories, not dilapidated or dilapidated. Units that were not dilapidated were further classified as "sound" or "deteriorating." Dilapidated housing was defined as that which "does not provide safe and adequate shelter and in its present condition endangers the health, safety, or well-being of the occupants."

14a. Condition *(Observe--do NOT ask)*	14b. If not dilapidated
O Dilapidated	O Sound
O Not dilapidated	O Deteriorating

The enumerator determined the condition of the unit by observation, on the basis of specified criteria related to the extent or degree of visible defects. Defects associated with weather-tightness, extent of disrepair, hazards to the physical safety of the occupants, and inadequate or makeshift construction were signs of other structural defects which might be hidden, such as the presence of dampness or infestation and inadequate wiring and rotten beams, which were not included in the criteria for determining condition. Housing classified as "dilapidated" had (1) one or more critical defects, (2) had a combination of minor defects in sufficient number or extent to require considerable repair or rebuilding, or (3) was of inadequate original construction. The defects were either so critical or so widespread that the housing unit was below the generally accepted minimum standard for housing and should have been demolished, extensively repaired, or rebuilt.

The enumerator was instructed to judge each unit on the basis of its own characteristics, regardless of the neighborhood, the age of the structure, or the race or color of the occupants. He was cautioned, for example, that although lack of paint was only a slight defect, this characteristics and other signs of neglect were warnings to look closely for more serious defects. Exterior covering might improve the appearance of a structure but not its condition, and the sturdiness of brick or other masonry walls could be misleading if there were defects in other parts of the structure.

The enumerator was provided with detailed oral and written instructions and with visual aids. In the training program enumerators were shown a filmstrip depicting various types of defects and heard a synchronized recorded narrative which explained how to classify condition on the basis of these defects.

It was not possible for the Bureau to achieve uniform results in the application of these criteria. Data on condition for large areas, which were based on the work of many enumerators, tended to have a smaller margin of relative error than data for small areas, which depended on the work of only a few enumerators.

The concept, definition, and training materials used in collecting data on condition in the 1970 CINCH survey were the same as those used in the 1960 Census of Housing. Data on condition of housing were not collected in the 1970 census.

Item 23. Highest grade of school completed.--A single question was asked concerning the highest grade of regular school completed by the head of the household.

23. What is the highest grade (or year) of regular school which -- (name of head in item 1) has completed?

Elementary through high school (grade or year)		College (academic year)
○ 1	○ 7	○ 1
○ 2	○ 8	○ 2
○ 3	○ 9	○ 3
○ 4	○ 10	○ 4
○ 5	○ 11	○ 5
○ 6	○ 12	○ 6 or more

○ Never attended school

If the head was attending school at the time of enumeration, the year or grade he then was attending was considered the highest year or grade of regular school completed. "Regular school" referred to formal education (whether in day or night school, full- or part-time) obtained in graded public, private, or parochial schools, colleges, universities, or professional schools. "Regular schooling" was that which might advance a person toward an elementary or high school diploma, or college, university, or professional school degree. Schooling or tutoring in other than regular schools was counted only if the credits obtained were regarded as transferable to a school in the regular school system. Education received in the following types of schools was not counted as regular schooling: Nursery school, kindergarten, or Head Start; vocational, trade, or business school outside the "regular" system; adult education classes; on-the-job training; and correspondence courses.

In the 1960 and 1970 censuses, information on years of schooling completed were obtained from answers to two questions, one on the highest grade ever attended and one on completion of the highest grade attended.

Item 24. Year head moved into unit.--In asking this question, the enumerator was instructed to use the name of the household head listed in item 1. The question referred to the year of the latest move. If the head moved back into a unit he had previously occupied, the enumerator recorded the year of the latest move; if he moved from one apartment to another in the same building, the year he moved into his present unit was recorded. The intent was to establish the year the present occupancy by the head began. (While the resultant data generally reflect turnover in occupancy of units, they do not indicate the total number of changes in occupancy that had occurred.) The data from this item were tabulated, but the item also was used to determine the skip pattern: If the move occurred in 1968 or earlier, items 26-37 were not completed. The same concept of "year moved into unit" was used in the 1960 and 1970 censuses.

24. In what year did -- (name of head in item 1) move into this unit?

○ 1969 or later -- *Ask items 25-41*

○ 1968
○ 1967
○ 1965-66
○ 1960-64
○ 1950-59
○ 1949 or earlier

If 1968 or earlier, ask item 25 and income questions (38-41) on page 1.

Item 25. Whether other household member moved into unit before head.--This item was designed to provide a measure of the number of households whose head was not the first household member to move into the unit. Data from this item also were used in editing item 24 when item 24 was blank or the entry was inconsistent with the year the building was built (item 12, form H-1).

25. Did any other member of this household move in before that?

○ No ○ Yes →

○ 1969 or later	○ 1960-64
○ 1968	○ 1950-59
○ 1967	○ 1949 or earlier
○ 1965-66	

Items 26-37. Data for recent movers.--These items were asked only for units occupied by "recent movers"; i.e., the head of the household had moved into the present unit in 1969 or 1970. Data on the number of households that moved also were collected in the 1970 census; however, the census data reflect the number of households that moved into their units during the period 1969 through March 1970, whereas the 1970 CINCH data cover the period 1969 to the date of the CINCH enumeration of the particular unit, which ranged from October 1970 to July 1971. No information was collected in the April 1970 census on the characteristics of the previous residence.

During this part of the interview the enumerator also used the name of the household head listed in item 1. In the tabulation of the characteristics of present and previous units occupied by recent movers, only those units were tallied for which the head of the present unit was also the head in the previous unit, as determined by the entry in item 26.

The enumerator recorded the location of the previous residence by writing in the complete address in item 27a; he used the name of the city, town, borough, etc., listed in item 27a when asking question 27b. Data in item 27a later were coded in Jeffersonville to FOSDIC markings in code boxes R and S for the purpose of relating the location of the previous and the present unit. Data in item 27b were used in the coding process as well as in the computer editing.

IF HEAD MOVED IN 1969 OR LATER

26. Was – – (name of head in item 1) also the head in his previous residence at the time he moved?

- ○ Yes
- ○ No

27a. Where was – – (name of head in item 1) previous residence located? *(Street address or rural route)*

City, town, borough (in New England, enter city and town)

County

State

27b. Was that inside the "city" limits of – –? *(Place listed in item 27a under city, town, borough, etc.)*

- ○ Yes, inside
- ○ No, outside
- ○ No, no city, town, borough listed in item 27a

FOR OFFICE USE ONLY

R. – Previous residence

- ○ Same county
- ○ Different county, same State
- ○ Different State
- ○ Foreign country

S. – Previous residence

In this SMSA:
- ○ In cc
- ○ Not in cc

In other SMSA:
- ○ In cc
- ○ Not in cc

- ○ Outside SMSA

- ○ Ø
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9

28. How many rooms were in his previous residence? *(DO NOT count bathrooms, porches, balconies, foyers, halls or half-rooms)*

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10 or more

29. In what year was his previous residence originally built?

- ○ 1969 or later
- ○ 1965 – 68
- ○ 1960 – 64
- ○ 1955 – 59
- ○ 1950 – 54
- ○ 1940 – 49
- ○ 1939 or earlier

30. How many housing units, both occupied and vacant, were in the building where his previous residence was located?

- ○ 1 unit (or one-family house)
- ○ 2 units
- ○ 3–4 units
- ○ 5–9 units
- ○ 10 or more units
- ○ A mobile home or trailer

31. Was his previous residence on a place of 10 acres or more, OR was any part of the property used as a commercial establishment or medical office?

- ○ Yes, 10 acres or more
- ○ Yes, commercial establishment, or medical office
- ○ No, none of the above

32. Was his previous residence – –

- ○ Owned or being bought by you or someone else in this household? *(Do not include cooperatives and condominiums here)*
- ○ A cooperative or condominium which was owned or being bought by you or someone else in this household?
- ○ Rented for cash rent?
- ○ Occupied without payment of cash rent?

If previous residence was owner occupied AND if "a one-family house" in item 30 and "No" in item 31.

33. What was the value of that property; that is, how much did that property sell for, or would it have sold for?

- ○ Less than $5,000
- ○ $ 5,000 – $ 7,499
- ○ $ 7,500 – $9,999
- ○ $10,000 – $12,499
- ○ $12,500 – $14,999
- ○ $15,000 – $17,499
- ○ $17,500 – $19,999
- ○ $20,000 – $24,999
- ○ $25,000 – $34,999
- ○ $35,000 – $49,999
- ○ $50,000 or more

34. When he moved from his previous residence was it – –

- ○ Sold or offered for sale?
- ○ Rented or offered for rent?
- ○ Demolished or scheduled to be demolished?
- ○ Moved to another site?
- ○ Other *(Describe)*

If previous residence was renter occupied

35. What was the monthly rent which he paid?

$ _____ .00

	H	T	U
Ø	○	○	○
1	○	○	○
2	○	○	○
3	○	○	○
4	○	○	○
5	○	○	○
6	○	○	○
7	○	○	○
8	○	○	○
9	○	○	○

36. What was the MAIN reason – – (name of head in item 1) moved from the previous residence?

Employment
- ○ Job transfer
- ○ New job
- ○ Enter or leave Armed Forces
- ○ Commuting reasons
- ○ Retirement

Family
- ○ Needed larger house or apt.
- ○ Needed smaller house or apt.
- ○ Newly married
- ○ Widowed
- ○ Divorced
- ○ Separated
- ○ Moved to be closer to relatives
- ○ Wanted to establish own household

Miscellaneous
- ○ Neighborhood
- ○ Schools
- ○ Health
- ○ Wanted to own a house or apt.
- ○ Wanted to rent a house or apt.
- ○ Lower rent or less expensive house
- ○ Wanted house or apt. with more facilities and conveniences
- ○ Displaced by urban renewal, highway construction, or other public activity

Other *(Describe)*

37. How many times has – – (name of head in item 1) moved since Jan. 1, 1969?

- ○ 1
- ○ 2
- ○ 3
- ○ 4 or more

INTERVIEWER:

ASK INCOME QUESTIONS, ITEMS 38 THROUGH 41, ON PAGE 1

Previous units were coded in box R as to whether they were located in the same or different county and the same or different State as the present units, or in a foreign country. If the previous unit was in a foreign country, it was tabulated with the group, "different head in present and previous unit."

In clerically coding box S, "in this SMSA" meant that the previous unit was located in the same SMSA as the present unit. "In other SMSA" meant that the previous unit was located inside an SMSA other than the SMSA where the present unit was located. The previous units were further categorized by whether or not they were located in a central city. If the location of the previous unit was determined to be in the central city (cc) of an SMSA, and "in this SMSA" was either in San Francisco-Oakland, Los Angeles-Long Beach, or Seattle-Everett, the response was further coded in box VIII (on page 4 of the H-2 form) to indicate the particular central city. "Outside SMSA" referred to territories outside those SMSA's that had been defined as of February 1971.

The definitions of items 28-32 and the categories used were the same as for similar items on the H-1 and H-2 forms for the present unit, as well as for similar items on the 1970 census questionnaire, except that the CINCH items 28-32 were designed to obtain data for the previous unit.

Items 33 and 34 were completed only if the previous residence had been previously owner-occupied. The categories for item 33, value, were the same as for item 20 except that the intent was to obtain the selling price of the previous property at the time of the move, not the estimated value at the time of enumeration. Question 34 referred to the status of the previous residence at the time the present head moved from the unit, not to any action that took place at a later date. The enumerator was instructed to mark the "other" category if the previous property fell into one of the following categories: It was held for settlement of an estate or could not be sold or rented; the house had been converted to nonresidential use; it had been destroyed by fire, flood, or other acts of nature; it was occupied by relatives, friends, or others, who were not paying rent; or some similar reason.

Question 35 was asked only if the head of the present unit had rented his previous residence. The instructions for entering the respondent's answer were the same as for item 21 for the present unit.

For question 36, main reason for move, the respondent was asked to choose from a flash card, which contained the same detailed list of reasons as the H-2 form, the reason he considered most important. The enumerator marked the corresponding category in item 36. In cases where the main reason was not listed, the enumerator entered the respondent's reply in the write-in space provided for other reasons. This reply was coded clerically in the processing operation: If the clerk was unable to find an existing FOSDIC category that was applicable, one of the following four codes was used: (1) Climate, (2) owner wants to sell, (3) debts, or (4) other. This code was entered in the box next to item S. Only one entry for item 36 was tabulated; if more than one FOSDIC circle had been coded, the one retained was that nearest the left side of the item 36 box and highest in the column.

The purpose of item 37 was to determine the number of times the present head of the household had moved between January 1, 1969, and the date of the interview. Any case where the present head had moved back to a unit he had occupied at some previous time during this period was to be reported as a separate move.

Items 38-41. Weeks worked and income.--These questions were asked for each person 14 years old and over who was either the head of the household or related to the head. Because the questions referred to calendar year 1970, the enumerator was instructed to rephrase the questions (using the words, "or will he ...") if the interview took place in 1970 rather than in 1971. If there was any doubt about the number of weeks worked or the income for the year 1970, the enumerator asked the respondent to make an estimate based on his experience during previous months in 1970. The data on weeks worked from item 38 were used in the clerical editing of the income items.

Ask for persons 14 years and older, related to the head

38. During calendar year 1970, how many weeks did he (or will he) work?	39. During calendar year 1970, how much did he (or will he) earn in wages, salary, commissions, assistantships, fellowships, bonuses or tips from all jobs? *(Amount earned before deductions for taxes, bonds, dues, or other items)*	40. During calendar year 1970, how much money did he (or will he) earn working in his own business, professional practice, or farm? *(Net after business operating expenses. If business or farm lost money, write "LOSS" above amount)*	41. During calendar year 1970, how much money did he (or will he) receive from other income such as interest, dividends, rents, Social Security, pensions, unemployment compensation, veterans' allowances, public assistance, welfare payments, or other regular payments?
	○ None $ _____	○ None $ _____	○ None $ _____
	○ None $ _____	○ None $ _____	○ None $ _____
	○ None $ _____	○ None $ _____	○ None $ _____
	○ None $ _____	○ None $ _____	○ None $ _____
	○ None $ _____	○ None $ _____	○ None $ _____
	○ None $ _____ *(Col. 39)*	○ None $ _____ *(Col. 40)*	○ None $ _____ *(Col. 41)*

The data in items 39-41 on total income for primary families and primary individuals were determined in the

NOTICE – Response to this inquiry is required by law (Title 13, U.S. Code). By the same law, your report to the Census Bureau is confidential. It may be seen only by sworn Census employees and may be used only for statistical purposes.

a. PSU No. | b. Control No. | c. E.D. No.

FORM 70H-3 (12-31-69)

U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

COMPONENTS OF CHANGE
H-3 ADDRESS SAMPLE
1970 CENSUS OF HOUSING

d. City, town, borough | e. State

f. Interviewed by | Date

g. Reinterviewed by | Date

Line No. (1)	Sample Key Letter and FOSDIC Page (2)	Name of head and address from 1960 Listing Book (House number, street, avenue, road, apartment number, or location) (3)	CURRENT STATUS OF WHOLE BUILDING: Does this building still contain one or more housing units? (4)	If building still contains HU's ("Yes" in item 4) How many? (5)	If building does NOT contain HU's ("NO" in item 4): Type of change (6)	Current use of site* (7)	Enter 1960 Sample Key Letter (Col.5) and FOSDIC Page (Col.7) from Listing Book for all HU's in building. (8)	FOR OFFICE USE ONLY
1	Sample Key Letter A FOSDIC Page	Name Address	1 ☐ Yes (Fill item 5 and STOP) 2 ☐ No (Fill items 6, 7, and 8)	1 ☐ 1 HU 2 ☐ 2 to 4 HU's 3 ☐ 5 or more HU's	1 ☐ Entirely group quarters 2 ☐ Entirely to nonresidential 3 ☐ Demolished* 4 ☐ Moved from site* 5 ☐ Unfit 6 ☐ Condemned 7 ☐ Boarded up 8 ☐ Other* (Specify)	1 ☐ Private 2 ☐ Public		
2	Sample Key Letter A FOSDIC Page	Name Address	1 ☐ Yes (Fill item 5 and STOP)	1 ☐ 1 HU 2 ☐ 2 to 4 HU's	1 ☐ Entirely group quarters 2 ☐ Entirely to nonresidential 3 ☐ Demolished* 4 ☐ Moved from site* 5 ☐ Unfit 6 ☐ Condemned 7 ☐ Boarded up 8 ☐ Other*			

processing operation, and the results were transcribed to item N on page 4 of the H-2 form. (See p. 34.) Although fewer questions were used to obtain income data in the 1970 CINCH survey than in the 1960 and 1970 censuses, the definitions and concepts were essentially the same. (See chapter 15.)

Form 70H-3, Address Sample

This form was used only in rural areas to identify structures that had contained the 1960 sample units but which were no longer in existence in 1970 or no longer contained housing units. The format was conventional, and information for the 1960 units lost from the inventory were later transcribed to the FOSDIC-readable form H-100. The definitions of the items were the same as those for form H-1. (See p. 29 ff.)

Space was provided on the H-3 form to list six units. Guided by entries in section III of the interviewer's control record, the enumerator transcribed from the 1960 census listing book the complete address of the building containing the 1960 sample unit and the name of the head of the household in 1960. He visited the area and located the address. If the building no longer existed or no longer contained housing units, the enumerator determined the reason for the loss. For structures no longer in existence, the enumerator also determined the current use and the public or private ownership of the site.

COSTS

The costs of the CINCH survey shown below by fiscal year include depreciation, but they do not include the cost of general administration, other general expense, or capital outlay which were recorded only at the appropriation level. These costs are shown in the 1970 Census of Population and Housing cost summary in chapter 1 of this procedural history.

(In thousands of dollars, figures rounded)

Project	Fiscal year					Total
	1969	1970	1971	1972	1973	
Total	183	623	2,254	768	525	4,353
Planning and coordination	66	103	131	162	117	579
Pretest	107	16	-	-	-	123
Pretest processing	10	6	-	-	-	16
Preenumeration processing	-	472	438	-	-	910
Data collection	-	26	1,464	33	(4)	1,519
Postenumeration processing and publication	-	-	221	573	[1]412	1,206

[1]Includes approximately $7,000 worth of printing that had not been delivered by the end of the fiscal year.

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